

Spectral World **MUSICS**

Proceedings of the
Istanbul Spectral Music Conference

Edited by Robert Reigle and Paul Whitehead

Conference organizers:
Michael Ellison, Robert Reigle, and Pieter Snapper



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Dedication

The Conference organizers would like to dedicate these proceedings to the memory of Kâni Karaca (1930-2004), in appreciation of his musical achievements, and for his generosity in granting us one of his last performances, in a completely new context.

İthaf

Konferans tebliğlerinden oluşan bu yayın, sahne yaşamının son icralarından birini, tamamen farklı bir bağlamda gerçekleştirme cömertliğini bize bahşetmiş olan, eşsiz müzik üstadı merhum Kâni Karaca'nın (1930-2004) değerli anısına ithaf edilmiştir.

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ISTANBUL TECHNICAL UNIVERSITY, RECTOR'S WELCOME

18 November 2003

Dear Scholars, Composers, Musicians, and International Participants:

Welcome to Istanbul Technical University and the Istanbul Spectral Music Conference.

We are pleased to be able to open our doors to participants from 15 countries across the globe, including distinguished composers and esteemed scholars dealing with timbre in its many guises. We are also fortunate to have with us a number of the founders of the original French and Romanian spectral movements of the 1970s and representative artists from the myriad of musics which have felt its influence.

Our conference showcases over 20 academic papers concerned with timbre, and 12 concerts featuring some of the most renowned performers specializing in spectral and spectrally influenced repertoire. This conference is a watershed event in the history of contemporary music in Turkey, and is without a parallel in the 30-year history of the spectral movement. It also is a clear sign of how far the spectral movement has spread beyond its French foundations, and points to some interesting possibilities for its expansion and interaction with other musical traditions.

This event also marks the first international conference hosted by the Dr. Erol Üçer Center for Advanced Research in Music (MIAM) at Istanbul Technical University. Founded in 1999 by composer Kamran Ince and violinist Cihat Aşkın, MIAM has already made a substantial impact on the Turkish and international musical communities through its research activities and championing of contemporary concert and electro-acoustic music.

We hope you will enjoy your experiences at the conference, at ITU, and in Istanbul as a whole, and I join with the event organizers and the entire MIAM faculty in welcoming you to Turkey.

Prof. Gülsün Sağlam
Rector, Istanbul Technical University

CENTER FOR ADVANCED RESEARCH IN MUSIC, DIRECTORS' WELCOME

Dear Distinguished Guests:

It gives us great pleasure to welcome you to the Istanbul Spectral Music Conference, to Istanbul, to Istanbul Technical University, and to the Dr. Erol Üçer Center for Advanced Research in Music.

Hosting the first international conference on spectral music has been a dream of our faculty and students for the past year and a half. We are very proud of what our Center has accomplished in its very short history since its opening in the fall of 1999. The school has one of the best music libraries in Turkey, possibly one of the best recording studios at any university in the world, great facilities, and above all an elite list of faculty members that I believe is second to none. This is increasingly evident in the impressive success of our graduates' and our current students' flourishing careers, and in their placements in jobs and other graduate programs around the world.

Our greatest accomplishment to date, however, has been the organization of this conference. To bring together the most important composers, scholars, and performers from across the world of spectral and spectral-influenced music has not been an easy feat. We would especially like to thank the conference organizing committee members, co-chairs Dr. Robert Reigle, Dr. Pieter Snapper, and Dr. Michael Ellison; and research assistants Onur Türkmen and Eray Altınbüken. We are very proud of what they have accomplished through their tireless work for the past year.

We know that the preparations of selecting the composers, scholars, and performers for this conference have been a great inspiration for our faculty and students, as has reacquainting ourselves with composers we knew and those that we have discovered in this process. This conference will greatly enhance our understanding of the many facets of spectral music and will be a stimulation to music today and for the development of music tomorrow.

May you think, feel, see, and hear beautiful spectra of music, and have fun during the Istanbul Spectral Music Conference in this great international metropolis. Again welcome. Thank you.


Prof. Kamran Ince, Prof. Cihat Aşkın
Co-Directors, Center for Advanced Research in Music

COMPACT DISC NOTES

DISC 1:

Track	Description	Time	Page
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2.	Münir Nurettin Selçuk – <i>Çıkar Yücelerden</i>	3:01	151
3.	Münir Nurettin Selçuk – <i>Kıldı zülfün tek perişan</i>	3:32	160
4.	Umar Temor – <i>Bazme Rabbani</i> (excerpt)	4:48	201
5.	Umar Temor – <i>Bazme Rabbani</i> , transcribed by Kathryn Woodard	6:26	202
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7.	Iancu Dumitrescu – <i>Remote Pulsar (II)</i>	11:45	227
8.	Tristan Murail – chords from <i>Gondwana</i>	0:18	251
9.	– sound object from <i>Serendib</i>	0:25	254
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13.	– transformation #4 from <i>Serendib</i>	0:31	255
14.	Mehmet Can Özer – <i>Dictionary of War</i> (excerpt)	7:54	259
15.	Paula Matthusen – <i>...of one sinuous spreading...</i> (excerpt)	6:03	415
16.	Matthew Goodheart – <i>Piano Improvisations</i> (excerpt)	13:10	428
Total Time		79:40	

DISC 2:

Track	Description	Time
1.	Pieter Snapper – <i>Wrong</i>	9:01
2.	İhsan Özgen – <i>Uzak</i>	12:08
3.	Eray Altınbüken – <i>Kumdaki Kan</i>	5:53
4.	Onur Türkmen – <i>Karşılama</i>	13:52
5.	Dimitrie Cantemir – <i>Sipihr Peşrevi</i>	4:39
6.	Kâni Karaca and Kinan Azmeh – <i>Improvisation</i>	12:45
7.	Michael Ellison – <i>Elif</i>	11:01
8.	Robert Reigle –  [Sphere]	9:58
Total Time		79:19

TRACK NOTES

1:1 **Bert Van Herck** (b. 1971) – *Amber* for flute, violin, viola, and cello. First recording. Peter Verhoyen–flute; Jo Vercruysse–violin; Jeroen Robbrecht–viola; Herwig Coryn–cello. Recorded by Vlaamse Radio en Televisieomroep, Belgium.

1:2 **Münir Nurettin Selçuk** (1900-1981) sings *Çıkar Yücelerden* by Saadettin Kaynak (music) and Vecdi Bingöl (text). Unknown percussionist; possibly Artaki Candan–Terzian–*kanun* (zither) and Nubar Tekyay–Çömlekçiyen–violin. Originally issued in Istanbul by Sahibinin Sesi (His Master’s Voice, Turkey), matrix number BS04825. Reissued on *Istanbul 1925*, New York: Traditional Crossroads CD-4266, track 3, 1994; and Istanbul: Kalan Müzik Yapım Ltd., CD-023, 1995.

1:3 **Münir Nurettin Selçuk** sings *Kıldı zülfün tek perişan*. Mesut Cemil–*tanbur*. From *Üstad Münir Nurettin Selçuk’un Geçmiş Yıllardan Özenlen Şarkıları: Tereddüt*. Istanbul: Coşkun Plak ve Kasetçilik, CD-010 (1994?), track 15.

1:4 **Umar Temor** – *Bazme Rabbani* [Spiritual Gathering] (2002) (excerpt from 10:18 recording). (Temor Publications.) Umar Temor–voice and *ghijak*, with musicians from Badakhshan, Tajikistan. Recorded 5 July 2002 in concert, at the Smithsonian Folklife Festival, Washington, DC, by Kathryn Woodard.

1:5 **Umar Temor** – *Bazme Rabbani* [Spiritual Gathering], transcribed for piano by Kathryn Woodard (2002). (Sonic Crossroads.) Kathryn Woodard–piano. Recorded 10 August 2006 in Frymire Auditorium at the Annenberg Presidential Conference Center, Texas A&M University. Joel Gordon, recording engineer.

1:6 **Ana-Maria Avram** (b. 1961) – *Axis Mundi (Istanbul Version)* for two violas, cello, and double bass (1999). (Edition Modern.) World premiere. Cornelia Petroiu, Ioan-Marius Lăcraru–viola; Theodor Iancu–cello; Ion Ghiță–double bass. Recorded live on 23 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University. Mastered by Iancu Dumitrescu and Ana-Maria Avram.

If, in the combinative musical thought one finds with obviousness a specific hierarchy of sound parameters: height, rhythm, intensity, timbre—for me, I think not only that this hierarchy is null and void, but that all the parameters of the sound form part of a continuum, of an unspeakable whole. Contrary to “figurative” musical thought, and yet avoiding minimalism, I apply the principle of continuous transformation to a non-figurative material drawn from the acoustic bases of the sound, of the spectrum, by using with predilection the heterophonic principle.

Exploring new techniques of instrumental play for the strings, *Axis Mundi* reiterates the dialectic between harmonic and inharmonic sounds, between noises, beats, etc., and pedal sounds, towards which the first coagulate. Dialectic—because the work exploits the ambivalence of the noise, which has the role to enforce the expression of the musical sound, thus avoiding its primitive function; at the same time, the sound is alloyed to the noise in multiple ways: by the beats which result between imperfect unisons, and by distortions of all kinds. The micro- and the macrostructure are drawn from the same bases, and the same generative principles: the relation between sound and noise, and that of symmetry around a fundamental sound-free string.

—Ana-Maria Avram

1:7 **Iancu Dumitrescu** (b. 1944) – *Remote Pulsar (II)* for ensemble and computer-assisted sounds (2003). (Edition Modern.) Hyperion Ensemble: Cornelia Petroiu, Ioan-Marius Lăcraru—viola; Leontin Boanta—bass clarinet; Emil Vişenescu—clarinet; Godri Orban—bassoon; Alexandru Sturzu, Alexandra Naşcutiu—percussion; Theodor Iancu—cello; Ion Ghiţă—double bass; Ana-Maria Avram—piano; Iancu Dumitrescu—electronics. Recorded November 2003 at MIAM Recording Studio, Istanbul Technical University. Mastered by Iancu Dumitrescu and Ana-Maria Avram.

The discovery of the almost unlimited possibilities offered by the utilization of computers in musical creation and sound transformation represented for me a new starting point in music—a reinforced commitment—through hyperspectralism. I discovered and appropriated myself, by means of computer-assisted sound, a “cosmic” poetical zone, the stellar dream—intuitions that I think are essentials in the imaginary of today's artist.

Remote Pulsar is a result of meticulous studies in the domain of microsound: harmonic and inharmonic spectra. The essential particularity and originality in this music was the systematic work with sound distortions; the opposition of harmonic sound to noise (inharmonic spectra), the musical normal sound to distorted sound. The form is a succession of huge sound

eruptions, of immense explosions, true “big bangs” that are preceded and followed by long mysterious moments, at the limit of the inaudible. The pre-recorded part and the one of the acoustic instruments are in a cryptic relationship: acousmatic. This makes undetectable the origin of the sound source by means of diagonal instrumental techniques applied to the traditional instruments, far from any delimitation, of any reference to traditional, classical sonorities, while the electronic sounds often exploit an ambiguity of timbres, on a recall with the instrumental sounds.

–Iancu Dumitrescu

1:8 **Tristan Murail** (b. 1947) – chords from *Gondwana* (1980) played on computer by Tristan Murail. Recorded during Murail’s presentation on 22 November 2003 at the Istanbul Technical University Social Facilities Conference Hall, Maçka, Istanbul.

1:9-13 **Tristan Murail** – examples from *Serendib* (1991-92) for large ensemble. Ensemble Intercontemporain, directed by David Robertson. From *Tristan Murail: Serendib, L’Esprit des dunes, Désintégrations*. Paris: Adès AD-750, track 1 (1996), reissued as Accord CD 465-305-2 (2003?). Live recording of CD playback during Murail’s presentation on 22 November 2003 at the Istanbul Technical University Social Facilities Conference Hall, Maçka, Istanbul.

1:14 **Mehmet Can Özer** (b. 1981) – *Dictionary of War* for electronic tape (2003) (excerpt from 15:00 composition). Produced at Özer’s home studio in Ankara, Turkey. Sounds recorded mostly in the studio and near Ankara, then manipulated with a P2-266 MHZ computer, Sound Blaster Sound Card, and Sound Forge 3.

1:15 **Paula Matthusen** (b. 1978) – *...of one sinuous spreading...* (excerpt). (Rosenthaler Musik.) First recording. Kathryn Woodard–piano; Paula Matthusen–electronics. Recorded in 2003 at Washington Square Computer Music Studio, New York University.

...of one sinuous spreading... (for piano and live-processing) was written through collaboration and improvisation with Kathryn Woodard. The title refers to Jorge Luis Borges’ famous short story “The Garden of Forking Paths,” in which the characters contemplate a temporal labyrinth with paths that bifurcate and converge with every decision a person makes. In a similar manner, the pianist and laptop performer make decisions that ultimately lead

to specific musical results at the expense of others, based on the musical spectra produced and analyzed during the course of the improvisation.

–Paula Matthusen

1:16 **Matthew Goodheart** (b. 1968) – *Piano Improvisations* (2003) (excerpt). (Evolving Door Music, BMI.) Matthew Goodheart–piano, played with Tibetan prayer bowl, crotale, and school bell. Recorded live on 19 November 2003 in Room 121, MIAM, Istanbul Technical University.

2:1 **Pieter Snapper** (b. 1967) – *Wrong*, for stereo soundtracks (2003). (Pieter Snapper, MSG.) Produced, performed, edited, and assembled by Pieter Snapper at the MIAM Recording Studio, Istanbul Technical University.

Wrong is an electro-acoustic work that explores the completely inappropriate intersection between spectral music and minimal techno club music. It examines and embraces this “wrong, unmusical” musical hybrid space in a way which the composer hopes will shed some light on the problematic nature of musical “wrong-ness” in itself.

–Pieter Snapper

2:2 **İhsan Özgen** (b. 1942) – *Uzak* [Distance] (2003). World premiere. Neva Özgen–*kemençe*; Yelda Özgen Öztürk–cello. Recorded live on 18 November 2003 at Mustafa Kemal Anfişi, Istanbul Technical University.

Cast in three movements, *Uzak* is scored for *kemençe* and cello, and includes solo passages for both instruments. I have always respected the openness to foreign elements that characterizes Turkish art music, and I have tried to further that tendency in *Uzak*. The piece is composed in an expressionist style and exhibits a striking influence from, among other sources, the Far East. I also took inspiration from the French Impressionists, who themselves responded to the aesthetic wealth of the East, and I acknowledge the strong influence of certain Russian works of the last century (such as Shostakovich’s Violin Concerto) in my musical reasoning.

–İhsan Özgen

Known for his innovative approach to Turkish classical music, İhsan Özgen has performed internationally with Turkey’s foremost musicians including Necdet Yaşar, Niyazi Sayın, and Kudsi Erguner. His main instrument is *kemençe*, but he also plays *rebab*, *lavta*, cello, and *tanbur*. In 1991, he was awarded the Abdi İpekçi Peace Award in recognition of his work with the Bosphorus Ensemble, a group composed of Turkish and Greek musicians. He has lectured on and performed Turkish music throughout the United

States, and is currently the head of the Stringed Instruments Department at Istanbul Technical University's Turkish Music Conservatory.

2:3 **Eray Altınbüken** (b. 1975) – *Kumdaki Kan* [Blood on the Sand] (2003). World premiere. Neva Özgen–*kemençe*; Erhan Birol–guitar; Yelda Özgen Öztürk–cello. Recorded live on 18 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

Kumdaki Kan is a one-movement elegy on the unrelenting bloodshed of war in the region that we call the “Middle East.” It features instruments from different cultures: a *kemençe*, which adopts its own idiomatic style and modal language, and a cello and guitar, which mostly provide a relatively atonal accompaniment. As combat approaches (in the agitated middle section) the cello abandons its earlier accompanimental role and becomes the narrator. The climax comes when the *kemençe* plays the core musical idea. The piece ends with a depiction of the blood of a dying man slowly dripping onto the sand. The last sound heard, a cello harmonic, symbolizes the soul of the dead, which turns into light and flies away towards the endless universe.

–Eray Altınbüken

Istanbul-born composer, arranger, and guitarist Eray Altınbüken is a graduate of Marmara University Communications Faculty (Radio, TV, and Cinema Art Department) and MIAM, Istanbul Technical University, where he studied composition under Kamran Ince and Hasan Uçarsu. He has worked at Turkish Radio and Television as an assistant director and composer, and for various studios as a guitarist. His work embraces a wide range of styles, reflecting his experiences both in broadcasting and as part of the Istanbul contemporary music scene. He is currently studying with İlhan Usmanbaş in the doctoral composition program at MIAM, where he is also a research assistant.

2:4 **Onur Türkmen** (b. 1972) – *Karşılama* (2002). Nermin Kaygusuz–*kemençe* and voice; Aslıhan Eruzun Özel–*kemençe*; Ş. Şehvar Beşiroğlu–*kanun*; Mehmet Emin Bitmez–*ud*; Cenk Öztürk–cello; Songül Karahasanoğlu Ata–*mey*; Hüseyin Tuncer–*bendir*. Recorded live on 18 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

Karşılama is a piece for a chamber ensemble which consists largely of ethnic Turkish instruments. The backbone of the structure is a kind of polyphony derived from basic Turkish *makam*-s. “*Karşılama*” is a ceremonial welcome which suits the opening concert of the conference.

–Onur Türkmen

Onur Türkmen graduated from Berklee College of Music, Boston, in 1998 with a degree in jazz composition. He graduated from MIAM, Istanbul Technical University, in 2004 with a master's degree in composition. Currently he is enrolled in the MIAM doctoral program and is a faculty member at Bilkent University's Music Department.

2:5 **Dimitrie Cantemir** (1673-1723) – *Sipîhr Peşrevi* (circa 1700). Ş. Şehvar Beşiroğlu–*kanun*; Nermin Kaygusuz–4-string *kemençe*; Mehmet Emin Bitmez–*ud*; Mithat Arısoy–*daire*. Recorded live on 18 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

Sipîhr is the name of the *makam* used in the piece. *Peşrev* (prelude) is one of two genres represented in the instrumental works appended to Cantemir's music treatise, *Kitāb-i 'ilmü 'l mûzîkî* (Book on the Science of Music). The piece opens with an unusual fanfare-like motive, and proceeds with material based on scalar patterns.

At age 14, Cantemir, Prince of Moldavia, was sent by his father to Istanbul, where he received a broad education. His treatise on Turkish music uses an innovative system of musical notation based on the Arabic alphabet and includes 350 instrumental compositions.

2:6 **Kâni Karaca** (1930-2004) and **Kinan Azmeh** (b. 1976) – *Improvisation* (2003). Kâni Karaca–voice; Kinan Azmeh–clarinet; Paul Bonnel–double bass (drone). Recorded live on 18 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

This improvisational dialogue uses unplanned musical cues to create a unique and ethereal event, a communing between an artist deeply rooted in religious traditional singing and reciting, and a classically trained New York-based clarinetist from Damascus. –Kinan Azmeh


Considered one of the best performers of Ottoman-Turkish music of the last 50 years, Kâni Karaca performed in a large range of sacred and secular styles. In his recitations of the Qur'an and his many other religious improvisations he was recognized as a great master, notable for his adherence to the authentic traditions of religious performance. He toured the world as a performer of Ottoman religious music with Mevlevi groups and other religious music ensembles, and made a great many recordings.

The only Syrian to take first prize at the Nicolay Rubinstein International Youth Competition (Moscow, 1997), Kinan Azmeh has appeared as a soloist throughout Europe, the Middle East, and the USA. He graduated with a master's degree from the Juilliard School of Music in 2003, studying with Charles Neidich. He premiered two clarinet concertos written for him, at

Lincoln Center, New York, and the opening of the Syrian Opera House in 2004. He is a member of the New York-based visual-electro-acoustic quartet Neolexica and the Arabic pop group Kulna Sawa.

2:7 **Michael Ellison** (b. 1969) – *Elif* (2003). (Michael Ellison, BMI.) World premiere. Kâni Karaca–voice; Hasan Tura–violin; Emil Vişenescu–bass clarinet; Jeff McAuley–cello; Onur Türkmen–*ney*. Recorded live on 19 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

Elif is the first letter of the Arabic alphabet, the root of the word “alphabet.” It is the first attempt at language, at vocal sound, and at musical utterance. We are speaking of beginnings, of change and changelessness. In *Elif*, the listener is the archaeologist, uncovering the voice of Kâni Karaca as a genuine artifact (or ancient book) beneath the dust, wholly itself, only veiled by the particles swirling around it, being swept away, coagulating and disintegrating. Instead of showing a tradition, we view a tradition and its obfuscation, the eternity of time washing, wasting, and disintegrating the tenuous presence of human culture. –Michael Ellison

2:8 **Robert Reigle** (b. 1955) –  [Sphere] (2003). (Acoustic Levitation.) World premiere. MiAM iMPROViSATiON eNSeMBLe (MIAM i.e.): Zeynep Hazer Aykal–violin; Zeynep Bulut–voice; Gökhan Deneç–tenor saxophone; Barış Güvenenler–cello; Günay Koçhan–violin; Ayşecan Olgun–piano; Tuna Pase–flute; Robert Reigle–tenor saxophone; Onur Türkmen–electric guitar. Recorded live on 23 November 2003 at Mustafa Kemal Concert Hall, Istanbul Technical University.

The title of this piece constitutes its score. The group begins in unison, half expand upward in pitch while the other half go down, and then the musicians return to a sustained unison—all over an extended time period. Giacinto Scelsi has influenced my music, and the subtitle refers not to the shape of the score, but to Scelsi’s concept of “spherical sound,” or sound with living overtone structures. Here the players must seek out shimmering sounds and emphasize combination tones over the course of the piece.

–Robert Reigle

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ÖZETLER

Basıma hazırlayan Mine Doğantan-Dack

Özet yazıları ya yazının asıl sahibi tarafından ya da, Onur Türkmen (OT), veya Robert Reigle (RR) tarafından yazılmıştır.

Mine Doğantan-Dack, Onur Türkmen, Jerfi Aji, Ahmet Altinel, Tolgahan Çoğulu, Pınar Erdoğan ve Emine Şirin Özgün tarafından tercüme edilmiştir.

SPEKTRAL MÜZİKTE ÇÖZÜMLEME, GÖRÜNGÜ BİLİM, VE ETNOMÜZİKOLOJİ

Panel Üyeleri: Ana-Maria Avram, Iancu Dumitrescu, Cornelia Fales, Tristan Murail

Oturum Başkanı: Joshua Fineberg

Spektral müzik akımı, bir müzik eserini oluşturan temel unsurların tanım ve yapılandırılmalarına farklı bir bakış açısı getirmiş olması dolayısıyla müzik tarihinde ayrıcalıklı bir yer edinmiştir. Bu ayrıcalık, Batı müziğinin geliştirdiği çözümleme yöntemleri bağlamında göz ardı edilmiş bir kavram olan ‘tını’nın spektral müzik bestecileri tarafından nasıl ele alındığı ile ilintilidir.

Tını, müziksel yaratının temelinde yer alır, ve ritim, armoni, melodi, biçim, zamanın düzenlenmesi gibi müziğin tüm diğer öğelerinin oluşumunu belirler. Bu durum, Batı müziğinde spektral müzik ortaya çıkıncaya dek geliştirilmiş olan tüm yapı kurmaya yönelik yöntemlerin zıt kutbunda yer alır. Spektral müzik öncesi dönemlerde, yukarıda sözü edilen öğelerin (ritim, armoni, biçim, melodi) birbirleri ile olan etkileşimleri besteci tarafından biçimlendirilir, ve böylelikle bir müzik eseri yaratılmış olurdu. Ancak bu biçimlendirmenin tasarlanmasında tını yer almaz, ya da bir yan ürün olarak kendiliğinden ortaya çıkardı.

Yirminci yüzyılda Ligeti, Stockhausen, Berio gibi öncü besteciler özellikle elektronik müzik çerçevesinde yaptıkları çalışmalarda tının öneminin farkına varmışlar ve bunu daha sonra akustik çalgılar için yazdıkları eserlerde yansıtmışlardır. Bu çalışmalar, müzik eserinin yapısal öğeleri arasındaki hiyerarşik düzene dair sarsıcı sorular ortaya koymuş,

ancak yine de tınının bir kavram olarak kurumsallaşmasına dair somut bir öneri getirmemişlerdir.

1970'lere gelindiğinde Gérard Grisey ve Tristan Murail IRCAM'daki bilgisayar teknolojisinin yardımıyla, belirli bir sesin detaylı spektrum çözümlemesini yaparak tınının somut verilere dayanan bir tanımlamasını yapmışlar ve böylece bu kavramı müzik yaratısının temeline oturtacak yöntemler geliştirmişlerdir. Aşağı yukarı aynı tarihlerde, Fransa'da meydana gelen bu oluşuma benzer bir oluşum Romanya'da yeşermeye başlamış, ilkelerini Romanya halk müziklerinin zengin tınısal içeriğinden ve görüngü biliminden alan Dumitrescu ve Radulescu gibi besteciler tınının en temel müzik kavramı olarak algılanmasını sağlayacak sezgisel yöntemler geliştirmişlerdir. Spektral müziğin temelini oluşturan Fransız ve Romen ekolleri, günümüze değin aynı amaç doğrultusunda iki karşıt yol benimseyen iki ayrı akım olarak gelişimlerini sürdürmüşlerdir.

İstanbul Uluslararası Spektral Müzik Konferansı bünyesinde gerçekleşen panelde, bu iki ayrı akımın kurucuları ve günümüzün öncü bestecileri Tristan Murail, Iancu Dumitrescu, ve Ana-Maria Avram ile tını kavramını Batı müziğinin bestecilik geleneği dışında değerlendiren etnomüzikolog Cornelia Fales konuşmacı olarak yer aldılar.

Panelde spektral müziğin tarihsel gelişiminin irdelenmesi dışında, sanat felsefesinin en temel sorunsallarından birisi olan sezgisellik/çözümleyici düşünce, ve öznel/nesnel karşıtlıkları Fransız ve Romen ekollerinin yöntem farklılıkları bağlamında tartışıldı. (OT)

BİR İSMİN ARKASINDAKİLER

Joshua Fineberg

Gérard Grisey'in belirttiği gibi bir bestecinin temelinde tek bir malzemesi vardır: ses. Joshua Fineberg'e göre bu tanımlama müziği (ses dışı) etkileşimlerden soyutlayan bir yaklaşım değildir. Yalnızca müziğin yaratılma süreci ile ilgili saf bir gerçekliğin altını çizer. Etkileşimlerin türü her ne olursa olsun ses, müziksel ifadenin tek malzemesidir. Bu sebepten ötürü, ancak bu malzemenin parametrelerinin derinlemesine incelenmesi, müziksel ifadeye yeni boyutlar kazandırabilir.

Joshua Fineberg'in görüşüne göre, yirminci yüzyılın ikinci yarısına değin besteciler esas olarak sesin perde parametresini kullanmışlar, ancak önemini kavramış dahi olsalar, tını parametresini değerlendirebilecek bilgi düzeyine erişememişlerdir. Bu eksiklik disonans/konsonans kavramlarının besteciler tarafından tek yönlü yorumlanmasına yol açmıştır. Böylelikle, 1950'lerden

1970'lere kadar post-serializm, katı estetik kurallara sahip ve tonal müziğin tam zıt kutbunda yer alan bir akım haline gelmiştir.

Spektral müzik (Romen ekolünün dışında kalan spektral müzik) böyle bir süreçte ortaya çıkmış ve sesin derinlemesine çözümlemesini yaparak bu yapay kutuplaşmanın dışına çıkabilmiş, her besteciye göre farklılık gösteren yeni estetik anlayışların oluşmasına olanak sağlamıştır. (OT)

TARİHSEL KÖKLERİNDEN YENİ PERSPEKTİFLERE SPEKTRALİZM Bert Van Herck

1998 yılında IRCAM'daki Yaz Akademisi'nde Gérard Grisey spektralizmin radikal bir değişim olmadığı fikrini ileri sürdü: spektralizm, geleneğin içinde saklıydı. Müzik tarihinde Monteverdi'den Bartók'a kadar bazı eserlerde zaman zaman - örneğin, bir akorun armonik zenginliği gibi - tınısal özelliklerin ön plana çıktığı görülür. Bu makalede, spektralizmin ne dereceye kadar devrimci ya da geleneksel olduğunu tartışacağım. Bu amaçla, genel olarak 'armoni' olarak adlandırdığımız kavramla bir karşılaştırma yapacağım: Armoni bir anlamda spektral midir, yoksa spektralizm armoninin gelişmiş bir hali midir? Spektralizm kökten bir değişim midir, yoksa sadece armoni yaratmada kullanılan özel bir yöntem midir?

Buradan, spektral müziğe yönelik başlıca eleştirinin, yani bu müziğin değişmeyen, durağan bir karakteri olduğu görüşünün irdelenmesine geçilecek. Bu durağan karakterin ortaya çıkmasında etkili olan nedenlerin net bir şekilde irdelenmesi, yukarıdaki sorulara bir yanıt bulunmasına ya da spektralizmin tarihsel kökleri konusuna farklı bir açıklama getirilmesine yardımcı olabilecektir. Geleneksel armoni kuramıyla tam olarak bütünleşmenin sağlanması, daha etkili bir spektralizm için bir başlangıç noktası oluşturabilir. (BVH)

MÜZİKTE İFADE ARACI OLARAK TINI Mine Doğantan-Dack

Batı müziğinin düşünce tarihinde, müzik sanatının hem anlaşılabilirliği hem de ifade gücü, bir çok kez bir eserin müzik dışı deneyimlere işaret etme, yani bu deneyimleri simgeleme ve anımsatma yetisiyle açıklanmıştır. Formalist geleneğin Hanslick ve Stravinsky gibi önde gelen savunucuları bile, müziksel deneyimlerimizde kaçınılmaz olarak böyle bir anımsatma

boyutu bulunduğunu kabul etmişlerdir.

Çeşitli yazarlar, müzik yapıları ile duygu, dil v.b. gibi insana özgü olgular arasında bulunan biçimsel benzerliklerin - ya da eşyapılılığın – müziksel simgelemeye temel oluşturduğunu ileri sürerler. Müziğin bu bağlamda en çok incelenen iki değişkeni perde ve ritim olmuştur. Müziksel anlam ve ifadeyi konu alan çalışmalarda, bu iki değişkene kıyasla tınıya çok az yer verilmiştir. Bunun bir sebebi, müzik kuramcıları ve psikologlarının, tını olarak bilinen karmaşık ve çok boyutlu olgunun nitelikleri hakkında tam bir uzlaşma sağlayamamış olmalarıdır. Her ne kadar bilgisayar teknolojisinin ortaya çıkması, tınısal olguları anlamamızda büyük rol oynamışsa da, halen tınının Batı müziğindeki simgeleme ve ifade etme işlevi ile ilgili özlü bir çalışma bulunmamaktadır.

Bu yazı, tınının simgeleme ve ifade etme boyutlarıyla ilgili bir ilk çalışmadır. Önce, çalgıların anlatım potansiyelleri ile ilgili az sayıdaki tarihsel kaynak gözden geçirilmektedir. Daha sonra da, tını deneyiminin bilişsel, duygusal, ve bedensel boyutları tartışılmakta, ve bir müzik eserinin tınısal açılımının ne şekilde kavramlaştırılabileceği ele alınmaktadır. (MDD)

SPEKTRAL MÜZİK VE SCHAEFFER YÖNTEMBİLİMİ

John Dack

Spektral müzik dillerinin incelenmesi, birçok çağdaş müzik eseri bağlamında sıkça rastlanan sorunlara dikkat çeker. Yakın zamanda yapılan araştırmalar, tınıyı biçimsel süreçlerin vurgulanmasını sağlayan başlıca etken olarak göstermekte ve bir sesin başlangıç özelliklerinin, vibratosunun ve perde uzamındaki hareketlerinin sunduğu anlatım potansiyellerine giderek daha çok dikkat çekmektedir. Spektral müziğin dili, sesin bütün bu boyutlarını içerir. Fransız besteci ve kuramcı Pierre Schaeffer, spektral müzik süreçlerinin çözümlenmesi ve açıklanmasında kullanılabilecek bir sistem geliştirmiştir. Schaeffer'in "Müzik Araştırması Programı" (Programme de le Recherche Musicale - PROGREMU) bestecilere ses malzemesini saptama, tanımlama ve düzenlemelerinde yardımcı olmak amacıyla ortaya konmuştur. Bu yazıda, PROGREMU'nun beş bölümünden çeşitli özellikler seçilmekte ve hem elektroakustik hem de çalgısal müzik örnekleri kullanılarak, bu özelliklerin genelde çağdaş, özelde de spektral müziğin çözümlenmesinde nasıl uygulanabileceği gösterilmektedir. Örneğin tipoloji, ses türlerini geleneksel 'nota'dan uzun süreli karmaşık seslere dek kapsayan eksiksiz bir sınıflandırma sistemi sunar. Bu sistem, seslerin morfolojik özellikleri ile birlikte ele alındığında, ses kütlelerinin besteci

tarafından karmaşık olarak biçimlendirilmesini, sürekli ya da kesintili kütle hareketleri oluşumu (Schaeffer'in 'perde' anlamında kullandığı genel terim) şeklinde tanımlamayı olanaklı kılar. Ayrıca, Schaeffer sisteminin belirlediği akıcılık ve pürüzlülük gibi morfolojik ölçütler, "basamak" oluşturma potansiyelleri açısından değerlendirilebilir ve perde-basamakları - yani dizi - modeline dayanarak, gerilme ve çözülme yaratan ses yapılarının oluşturulması sağlanabilir. (JD)

SPEKTRAL MÜZİK VE LİSE ÖĞRENCİLERİ

David Gerard Matthews

Spektral müzik dilinin birçok yönü (mikrotonlar, aşırı uçtaki gürlük seviyeleri, periyodik olmayan ritimleri, karmaşık dokusu, elektronik öğelerle olan bağlantısı) icra ve notasyon ile ilgili çeşitli hususlar ortaya çıkartır. Spektral müzik bestecileri bu hususları ele almak için çeşitli yöntemler geliştirmişlerdir. Spektral müzik eserlerinin partiyonları, çağdaş icra uygulamaları bağlamında incelenebilecek zengin kaynaklar oluşturur. Bununla birlikte, spektral müzik eserlerinin büyük çoğunluğu yeni müzik konusunda uzman kişiler tarafından icra edilmek üzere yazılmış olup amatör müzisyenlerin kolay erişemeyecekleri bir seviyededir. Bu açıdan amatörlerin ve öğrencilerin icra konusunda karşılaştıkları zorluk ve karmaşıklık daha da belirgin hale gelir.

Bu makale, yazarın bir spektral müzik eseri (Nefesli Çalgılar Orkestrası için Adagio) yazma ve eserin provalarını lise öğrencilerinden oluşan bir grupla gerçekleştirme sürecinde karşılaştığı sorunlara odaklanarak spektral müziğin notasyonunda ve algılanmasındaki zorluk ve karmaşıklıkları araştırmaktadır. Prova sürecinde bu sorunlara orkestra şefi tarafından geliştirilen çözümler ve spektral müziğin konu üzerinde uzmanlaşmamış müzisyenler tarafından genel olarak nasıl algılandığına dair hususlar sunumda tartışmaya açılacaktır. (DGM)

TERS YÜZ OLMUŞ MÜZİK: SPEKTRAL MÜZİĞİN "DOĞA" AKORLARI

Tildy Bayar

Doğal olanın yapay olarak üretilmesi, Batılı besteci ve müzik düşünürleri arasında saygıdeğer bir geleneğe sahiptir. Spektral müziğin 'doğal sesler'e bakışı bu bağlamda özellikle aydınlatıcıdır. François Rose, spektral müzik

bestecilerinin doğal olana ait görüşlerini, teknolojik süreçler bağlamında oluşturduklarını göstermiştir. Kompozisyonlarının malzemesini oluşturan sessel olgulara yaklaşımları açısından ele alındığında, Murail ve Grisey gibi besteciler (mizahi bir deyişle) doğaya karşı açık bir sapkınlık içerisinde bulunmak, ve hatta doğaya karşı gelmiş olmakla suçlanabilirler.

Spektral müzik bestecileri tarafından ortaya atılan doğal olgularla ilgili düşünceler, yalnızca estetik varsayımlar mıdır yoksa müziksel deneyimlerle ilgili gerçekleri mi ifade ederler? Çoğu spektral müzik eserinde ‘doğa,’ işitsel süreçlerin kontrollü koşullar altında sağlanmasının metaforik bir ifadesi olarak ortaya çıkar. Bu çeşit müziksel deneylerde işitsel ilke ile müziksel bağlam arasındaki sınırlar belirsiz hale gelir ve ortaya çıkan müziğin temel anlatım içeriğini verinin kendisi oluşturur. Geleneksel anlamdaki anlatım içeriği ise müzik dokusu olarak işlev görür. Tahmin edilebileceği gibi, spektral müzik bestecileri ve kuramcıları çoğu kez kompozisyon öncesi süreçle müziksel sonucu birbirine karıştırmış gibi görünürler.

Bu makale, Boretz’in tonal müziğin doğallığının anti-rezonant olduğu öncülünden başlayarak, kompozisyon açısından ‘doğal’ spektral özelliklere bağlı olmanın müziksel deneyimler üzerindeki etkilerini çözümleyici bir yaklaşımla sorguluyor. Spektral müzik bestecilerinin tasarladığı şekliyle ele alındığında, bu müziğin iki yönden ters-yüz olduğu gösteriliyor: yani, ‘doğal’ olanın, doğanın teknoloji aracılığıyla yeniden şekillendirilmiş görüntüsü olarak ortaya konması ve çözümsel verilerin müziksel betimlemenin içeriği olarak öne çıkarılması. (TB)

TINININ DOLAYLI OLMA HALİ: BURUNDİ VE BATI SANAT MÜZİKLERİNİN TINIYA YAKLAŞIMLARI

Cornelia Fales

Bu sunumda birbirinden oldukça farklı iki kültürün tınıya olan yaklaşımları ve tınıyı kullanım alanları karşılaştırılmaktadır. Bu karşılaştırmanın bir tarafında Batı sanat müziğinin tarihsel kuramsallığı, diğer tarafında ise Afrika’nın belirli kültürlerinde halen var olan - ve ezeli olarak var olduğu varsayılan - müzik yer almaktadır. Avrupa kültürünün 1699’dan günümüze kadar olan süreçte tını olgusundan haberdar olması, hem tarihsel bağlamda, hem de yakın zamanda yapılan algılamayla ilgili araştırmalar ışığında tartışılmıştır. Yazara göre tını, algının dolaylı veya bilinçaltına ait bir nesnesidir. Böylelikle algının dolaysız veya bilince ait bir nesnesi olan perde parametresinden ayrılır. Burundi kültüründe var olan

tınıya özgü kavramlar hakkında yapılan tartışmalar, bu kültürde yapılmış olan geniş çaplı alan çalışmalarını temel almıştır. Bu çalışmalarda, ünlü ‘fısıltı şarkıları’ özel bir odak noktası oluşturur. Batının, müziksel kompozisyonun kurumsallaşması sürecinde ısrar etmiş olması karşısında, Batıya kıyasla daha az kısıtlayıcı olan Burundi kültürü, tınının bilinçli kullanımına bir örnek oluşturur. (RR)

TÜRK VOKAL MÜZİĞİNİN MİMARİSİ: MÜNİR NURETTİN SELÇUK

Nilgün Doğrusöz

Münir Nurettin Selçuk’un (1900-1981) Türk vokal resitalistleri arasındaki en yenilikçi sanatçılardan biri olduğu varsayılır. Bu bildiride, Selçuk’un *a cappella* olarak seslendirdiği iki eserinin spektrografik çözümlmeleri yapılarak müzik icrasının estetik görünümü ortaya konmaktadır. Selçuk’un ses alanını, artikülasyonunu, vibrato ve glissando gibi yeniliklerini gözlemleyerek Türk müziğinin estetiğindeki değişimin yapısını da açıklayabiliriz.

Söz konusu spektrografik çözümlleme, Selçuk’un Hüzam makamında biri şarkı diğeri vokal doğaçlamadan (gazel) oluşan iki icrasına dayanmaktadır. Bu bağlamda, spektral varyasyonun çeşitleri, dinamik nüanslar, vokal formantının en yüksek rezonanslarının durumu tartışılmaktadır. Müziksel çözümlleme ile metin-dilbilimsel çözümlleme bir araya geldiğinde Selçuk’un sesli ve sessiz harflerinin artikülasyonunun benzersiz kalitesi görülür. Selçuk’un müziksel icrasındaki değişim Paris’te şan derslerine katılımından sonra ortaya çıkmıştır. Spektral çözümlleme ile ortaya konulan bu değişim, Türk müziği estetiğinin öncü mimarlarından biri olan Selçuk ile ilgili yeni bir bakış açısının varlığını göstermektedir. (ND)

EZANDA VOKAL TINI ÜZERİNE KÜLTÜRLER ARASI BİR KARŞILAŞTIRMA

Eve McPherson

Bu çalışmanın amacı, İslam’ın dünya üzerinde farklılıklar içeren kültürler tarafından uygulanıyor olması gerçeğinden yola çıkarak, değişmez akustik özelliklerin ayrı kültürel alanlarda var olabileceği tanısını kurumsallaştırmaktır. Bu sunu, hitap ettiği dinleyicilerin estetik beklentilerinden esinlenmiş olup akustik ayrıntıların incelenmesi ve ayırt

edilmesinde vokal tını çözümlemelerinin bir yöntem olarak kullanılmasına örnek teşkil eden bir çalışmadır. Vokal tını çözümlemelerinin getirdiği zorlukların başında, müziğin yerli dinleyicilerinin estetik tarzını belirleyen kültürdeki sessiz, ince ve aynı zamanda da yerleşik olan akustik ayrıntılar karşısında duyarsız olabilen etnomüzikolog vardır.

Bu sunu, bu sorunları sesin genel yerli özellikleriyle karşılıklı bağlantı gösteren akustik özelliklerini birbirinden ayırarak ele almayı deneyen bir yöntem çalışmasıdır. Özellikle Kuzey Afrika ve Orta Doğu kültürlerinde müezzin tarafından okunan ezan örneklerini karşılaştırmaktadır. Böyle bir karşılaştırma çeşitli nedenlerle ilginç bir çalışma oluşturur: (1) Ezan sesi İslami toplumları tanımlar; (2) Yerel dil her ne olursa olsun ezan Arapça okunur; (3) Ezanda tercih edilen vokal ses, dini yazılarda belirtilmiştir. Bu çalışma, spektografik çözümlemeler aracılığıyla aynı akustik özelliklerin değişik kültürde ezanı farklı kılıp kıldığını ve bu akustik özelliklerin pan-islamîk ideallere uyup uymadığını araştırmaktadır. (EM)

BİR YENİ GİNE KÖYÜNDE ATALARA AİT RUHLARIN TINISI

Robert Reigle

Papua Yeni Gine'nin Serieng Köyü'ndeki erkekler, atalarına ait ruhların seslerine çeşitli yollarla hayat verirler. Bunların en göze çarpanı şarkı söylerken kendi seslerini değiştirmeleridir. Neden ruhları temsil etmek için özellikle bu sesler seçilmiştir? Bu yazıda *Tambaran* ruh seslerinin tınısal özelliklerini inceliyor ve bunların tarihsel gelişimiyle ilgili bir kuram ortaya koyuyorum. Sorunun yanıtı, ses panoraması, bu yerleşim yerinin tarihi, toplumsal cinsiyet yapıları ve beste uygulamalarına dair kısa bir tartışma yoluyla ortaya çıkacaktır.

Bu kültürde, kadınların kutsal müzik aletlerini görmeleri yasaktır. Buna karşın, toplumun dinsel ve toplumsal düzeninin korunması için kadınlar bu aletlerle yaratılan sesleri (yani atalara ait ruhların seslerini) duymak zorundadır. En önemli müzik aletinin ismi "*Tambaran*'ın anası"dır; fakat bu aletin tınısı, isminin uyandırdığı çağrışımın aksine, özellikle erildir; erkek ses aralığının en altında ve dinamik aralığının en tepesinde yer alır.

Yani *Kaapu*'da toplumsal cinsiyet, birinci dereceden şekillendirici bir kuvvettir. *Kaapu*, ruh, kutsal müzik aleti ve kutsal ezgi anlamlarına gelen ve geleneksel Serieng dinine ait çok-anlamlı bir terimdir. Kutsallığının korunması için, *Kaapu*'nun sessel icra yoluyla ortaya koyulması gerekir. *Kaapu*'nun sessel niteliğinin seçimi geleneksel dinin ne ölçüde etkin

olduğunu belirler. Yazım, ruh seslerinin üretilmesindeki çifte öznelliğin –ruh ve insan- değerlendirmesiyle son buluyor. (RR)

TINISAL YENİLİKLER YOLUYLA GELENEKSEL SESLERİN ÇAĞRIŞTIRILMASI

Kathryn Woodard

John Cage'in hazırlanmış piyano için eserleri, tınısal arayışlar açısından belirleyici olmuş yenilikler ortaya koyar ve Batılı olmayan müziğin sesini Batı geleneklerine uygun hale getirme konusunda yeni bir yöntem teşkil eder. Ancak yakın geçmişte, farklı coğrafyalardan besteciler, sınırları aşmak ve kendi geleneksel müziklerini bir Batı enstrümanında - piyanoda - temsil etmek amacıyla birbirinden yenilikçi tekniklere başvurmuşlardır. Sunacağım konferans-resitalde, Batılı olmayan müzik geleneğinin tınlarını taklit etmek ve sesini çağrıştırmak amacıyla, hazırlanmış piyanonun ve genişletilmiş tekniklerin kullanımını örnekleyen dört piyano eseri yer alacak. Dinleyiciler, Cage'in *Sonatas and Interludes*'lerinden seçtiğim örneklerle, bu eserden etkilenecek yazılmış diğer üç eser arasında karşılaştırma yapabilme şansını bulacaklardır. Azerbaycan'dan Franghiz Ali-Zadeh ve Çin'den GE Gan-ru, geleneksel çalgıların – Ali-Zadeh'de kanun, GE Gan-ru'da gonglar ve *qin* – sesini yaratmak için, genişletilmiş tekniklere başvurmuşlardır. Programdaki son eser, Tacikistan'dan Umar Temor'un geleneksel şarkısı ve dansı üzerine yaptığım bir uyarlama. (KW)

Program:

John Cage	<i>Sonatas and Interludes</i> (bölümler) (1946-48)
Franghiz Ali-Zadeh	<i>Music for Piano</i> (1989/97)
GE Gan-ru	<i>Gu Yue</i> [Ancient Music] (1986)
	Gong
	Qin
Umar Temor	<i>Bazme Rabbani</i> [Spiritual Gathering]
	(Uyarlama: Kathryn Woodard) (2002).

SES SİMYASI

Ana-Maria Avram

Spektral müziğin kapsamlı bir tanımını yapmanın yollarından birisi, diğer müzik türleri ile olan yapısal ve yöntemsel farklarını açıklamaktır. Özellikle kendisi gibi tınıyı müziksel yaratının merkezine koyan diğer bestecilik

akımları ve folklorik müzikler ile olan farklarını belirtmek, spektral müziğin ne olup ne olmadığını daha net bir biçimde ortaya koyar. Ana-Maria Avram bu farklılıkları açıklarken sesin spektral müzik bestecisinin karşısına nasıl “canlı bir varlık” olarak çıktığını, bu varlığı bir müzik eseri haline getirmenin neden temel bir sorun olduğunu ve bu sorunun çözümünde ses denilen canlı varlığın bünyesindeki karşıt kavramların (dönüşüm/kimlik, süreklilik/süreksizlik, ses/gürültü, içsel ritim/dışsal ritim) nasıl kullanıldığını kendi bakış açısından anlatıyor. (OT)

ŞİİR, RESİM, TARİH, VE BİLİNÇ

Xavier Dayer

Günümüzde “yeni müziğin” önemli özelliklerinden biri, bestecilerin belirli bir akımdan bağımsız olarak çalışmalarıdır. Xavier Dayer de spektral müziğin öncü bestecisi Tristan Murail’in öğrencisi olmasına rağmen kendisinin bu akıma ait olmadığını belirterek bu tanıma uyar. Müziğinin estetik yapısını kurarken resim, edebiyat gibi farklı disiplinlerden yararlanan besteci, spektral müziğin tınıyı merkez alan yapısını şiirsellik ve renk karşıtlıkları ile özdeşleştirerek bu farklı disiplinlerle nasıl daha organik bir ilişkiye girdiğini açıklıyor. (OT)

SESİN İŞILDAYAN GÜCÜ

Iancu Dumitrescu

Spektral müziğin Romen ekolünün öncü bestecisi Iancu Dumitrescu’ya göre ses, müzik değildir. Müzik, ses denilen gerçeğin küçük bir parçası olabilir. Bu gerçeklik sonsuzdur. Bestecinin macerası bu sonsuzluğu anlamaya çalışmakla başlar. Dumitrescu, kendi müziksel macerası süresince efsanevi orkestra şefi Sergiu Celibidache’den nasıl etkilendiğini, Hyperion Ensemble’ın müziğindeki yerini, kullandığı notasyonun değişen müziksel düşünceleriyle birlikte nasıl değiştiğini, sezgiselliğin kendisi için önemini ve son dönemlerde neden bilgisayar kaynaklı sesler kullanmaya başladığını açıklıyor. (OT)

HAFIZA VE SÜREÇ

Joshua Fineberg

Spektral müzikte ana malzemenin bilgisayar destekli yöntemler kullanılarak elde ediliyor olması esere kaçınılmaz bir nesnelliğin hâkim olmasına yol açabilir. Bu yöntemlerin sesin pek çok değişik parametresinin çözümlenmesine olanak vermesi malzemenin oldukça karmaşık bir hale gelmesine neden olur. Bu karmaşıklık, malzemenin kendiliğinden belirli bir süreçten geçerek yeni bir biçime dönüşmesine olanak tanır. Bu durum malzemenin dönüşmeden önceki halinde de var olan nesnelliği destekler. Joshua Fineberg bestecinin bu dönüşüm sürecini müziksel biçim doğrultusunda nasıl şekillendirebileceğini ve böylelikle kendi öznelliğini yaratılan esere nasıl aktarabileceğini kendi eserlerinden örnekler vererek açıklıyor. (OT)

SPEKTRAL MÜZİKTE ZAMAN VE BİÇİM

Tristan Murail

Tristan Murail hem kendi hem de Gérard Grisey'in eserlerini belli bir zamandizini içerisinde tartışarak spektral müzik düşüncesinin nasıl bir evrim sürecinden geçmiş olduğunu açıklıyor. Spektral müzikte biçimin temel taşı oluşturan malzeme sesin tını parametresi ile doğrudan ilişkilidir. Ancak bu tınının diğer parametrelerden ayrı bir konumu ve özelliği olduğu anlamına gelmez. Sesin tüm parametreleri iç içe geçmiş bir bütünlük halinde var olurlar. Spektral müzik bestecisi bu iç içeliğin farkındadır. Bu yüzden müziksel malzemenin kimliği ve bu kimliğin yapının süresi boyunca dönüşümü, Batı müziğinde var olan geleneksel biçim anlayışı ile temel farklılıklar gösterir. Murail konuşmasında, eserlerindeki malzeme, süreç ve form arasındaki ilişkileri tartışmanın yanı sıra bu farklılıkların dinleyicinin algısı üzerindeki etkileri konusundaki düşüncelerini ortaya koyuyor. (OT)

SAVAŞ SÖZLÜĞÜ

Mehmet Can Özer

Besteci, “Savaş Sözlüğü” isimli 15 dakikalık elektroakustik müzik eserini tarif ediyor. İronik olarak, kendisinin bu sunumu yaptığı günün ilerleyen saatlerinde İstanbul'da iki bombalama olayı gerçekleşir. Yazı, savaşla ilgili

bazı felsefi düşüncelere ve bunların eserdeki tınısal kullanımına ilişkindir.
(MÖ)

YARIM YAŞAM'A GİDEN YOL Curtis Roads

Besteci, partiküler sentez üzerine yaptığı ilk deneylerden, 1990'larda diğer bestecilerden aldığı esinlere, oradan da *Half-life* [Yarım-Yaşam] (1998-99) isimli çalışmasına değin geçen süreci değerlendiriyor.

Bu sunumda *Yarım-Yaşam*'ı oluşturan işlem ve fikirlerin tanımları iki ayrı bölümde yer alıyor: Sonal atomlar ve Partiküller. Eserin yaratılmasında kullanılan teknik ekipmanın ayrıntıları "Stüdyo Teknolojisi" bölümünde sunuluyor. Besteci son olarak, *Yarım-Yaşam* için geliştirilmiş olan estetik ve teknik fikirlerin kullanıldığı *Nokta Çizgi Bulutu* isimli bir dizi kompozisyon ile ilgili kısa bir tartışmaya yer veriyor. (RR)

SPEKTRAL KOMPOZİSYON TEKNİKLERİ: TRISTAN MURAIL'IN MÜZİĞİ Rozalie Hirs

Spektralizmin besteci-yaratıcıları, kavrayış ile algı arasındaki ilişkinin farkına varılmasını amaçladılar. Spektralizmin temelinde, logaritmik bir düzenin ve matematiksel fonksiyonlar aracılığıyla kurulan yapıların belirlediği sürekli değişim ve bütünsel süreç düşüncesi bulunuyordu. Bu diferansiyel yaklaşım, armoni ve tınının zaman içerisinde tamamen kontrol edilmesini vurgulayarak biçimin yapısını sağlamlaştırıyordu.

Kaydedilmiş sesin FFT çözümlemesinden elde edilen akustik spektrum bir model oluşturuyor (akustik model), elektronik müzik teknikleri ise orijinal frekans verisinin dönüştürülmesinin (elektronik akustik alana aktarılması) modeli oluyorlardı. Bu tekniklere örnek olarak, amplitüd modülasyonu, ring modülasyonu, frekans modülasyonu, frekans değişikliği (frekans aktarımı) ve katkılı sentezi sayabiliriz. Bu bağlamda, aditif sentezin özel bir önemi vardır; çünkü birçok spektral eser dönüştürülmüş ya da dönüştürülmemiş frekans verisinin çalgısal aditif sentezini yapmıştır. Bundan da öte, FFT çözümlemesi, tınının daha derinlemesine anlaşılmasına ve yeni orkestrasyon tekniklerinin geliştirilmesine ve bazı seslerin içerdiği spektral yapıların, örneğin distorsiyon olgusunun formalizasyonuna yol açmıştır.

Sözedilen tekniklerin birçoğu Tristan Murail'in müziğinden örnekler alınarak tartışılacaktır. *Désintegrations* (1982-1983) ve *L'Esprit des dunes* bağlamında (1994) progresif distorsiyon olgusu ve çalgısal aditif sentez, *L'Esprit des dunes* ve *Le Partage des eaux* bağlamında (1995) akustik model, *L'Esprit des dunes* bağlamında frekans değişimi, *Le Partage des eaux* bağlamında ise *vocoder* tekniği ele alınacaktır. (RH)

TRISTAN MURAIL'IN *WINTER FRAGMENTS* ESERİNİN ÇÖZÜMLEMESİ Tolga Tüzün

Bu makale ses nesnelerinin çözümlemesine dönüşümsel bir yaklaşım sergiliyor. Bağlamsal tınısal fonksiyonları çözümleyebilmek için “Tınısal Konfigürasyon Uzamları” ve “Dönüşümsel Yol” kavramlarından faydalanılıyor. Bu analitik kavramlar Tristan Murail'in küçük oda orkestrası ve elektronikler için yazılmış *Winter Fragments* adlı parçasını çözümlemek için kullanılıyor. (TT)

SESİN MÜZİĞİ: GÉRARD GRISEY'İN *PARTIELS* İSİMLİ ESERİ Chris Arrell

Grisey'in erken dönem spektral eserleri sese, hem frekans olarak hem de oktavın eşit tampere bir şekilde bölünmesi olarak ikili bir anlam yüklerken, birçok çözümleme, özellikle eski yöntemi içeren kesitlere odaklanmıştır. Bu sunum, *Partiels*'in her iki sistemde çözümlemesini sunacaktır. Belli bir zamansallık içinde, *harmonicity/inharmonicity*; *periodicity/aperiodicity*; *additive synthesis* (katkılı sentez) ve ring modülasyonu spektral tekniklerinin ön kavrayışı kullanılacaktır. (CA)

PHILL NIBLOCK'UN MÜZİĞİ Michele Rusconi

“Bütünüyle müzik dışı bir bakış açısına sahibim. Kendimi bir müzisyen olarak değil, bir besteci olarak görüyorum”.
Phill Niblock.

Niblock 1960'lardan bu yana bir sanatçı olarak kendi multimedya tarzını keşfediyor. Donald Judd ve Sol Lewitt gibi görsel sanatçıların minimalist

akımından etkilenen, ve kendisi de fotoğraf ve film alanlarından gelen Niblock, kendine has, tamamen eşsiz ve hemen tanınabilen bir müzik geliştirmiştir. Phill Niblock'un besteleri, birbirlerinden mikrotonal olarak bir kaç Hertz ile ayrılan kesin frekanslara sahip uzun süreli seslerin (*drone*) belirlediği ve bir stüdyoda müzisyenler tarafında çalınmak suretiyle üretilen ses perdelerinin çok kanallı kayıtlarından oluşur. Bu besteler temel olarak, yüksek sesle çalındığında mekânın akustiğiyle etkileşim içine giren kayıtlara dayanır. Bütün parçalarda, doğuşkanlar ve armonik vuruşlar duyulabilir. Bir dinleyicinin ne duyduğu odanın neresinde bulunduğuyla bağlıdır; böylece müzik sadece dinleyicinin algısında şekil alır. Müziğe ondan tamamen bağımsız olarak ve kesinlikle senkronize edilmemiş bir şekilde, beş kıtadan işçileri anlatan çok sayıda görüntünün büyük ekranlarda sergilenmesi eşlik eder. İnsanların yüzleri genelde gösterilmez; görüntüler sadece onların hareket halindeki bedenlerine ve ellerine odaklanır ve böylece hayali bir dansçının yerini alır. (MR)

KUZEY AMERİKA SPEKTRALİZMİ: JAMES TENNEY'İN MÜZİĞİ Robert Wannamaker

1971 yılından bu yana Amerikalı-Kanadalı besteci James Tenney'in eserleri yerleşmiş adı ile "spektral müzik" in teknik ve üslup özelliklerinin birçoğunu sergilemiştir. Tenney'in eserleri arasında, armonik serilerin ve bu serilerden türemiş perde ilişkilerinin orkestrasyonlarını içeren enstrümantal müzik tarzının en erken örnekleri, spektral çözümlemeyi örnek alan 'enstrümantal sentez', elektro-akustik seslerin orkestrasyonu, akustik ve psiko-akustik bilimlerinden türetilmiş olan yapısal kavramlar (*Shepard tones*, *difference tones*, armonik füzyon, ve *residue pitches*) kademeli biçimsel süreçler ve genel olarak ses olgusunun fenomenolojisiyle ilgili düşünceler yer almaktadır. Bu makale, hâlâ yeterince tanınmayan bu önemli çalışmalar bütününe bir giriş niteliği taşımakta ve Cage ve Partch'tan günümüze gelen fenomenizme dayalı tipik bir Amerikan estetiği ile bağlantı kurmaktadır. (RW)

SPEKTRAL FLÜT TEKNİKLERİ ATÖLYESİ Helen Bledsoe

Günümüzün önemli flüt sanatçılarından Helen Bledsoe, çağdaş müzikte önemli yer tutan bestecilerin flüte olan yaklaşımlarını, flüt ile tını üzerine

gerçekleştirilen deneysel çalışmaları ve ileri seviyedeki yeni teknikleri ve tüm bu yeniliklerin notasyona nasıl aktarıldığı konusu üzerine sorulan soruları yanıtlıyor. (OT)

HYPERION ENSEMBLE ATÖLYESİ

Iancu Dumitrescu ve Ana-Maria Avram

Spektral müziğin Romen okulunun önemli bestecileri Iancu Dumitrescu ve Ana-Maria Avram bu seminerde dinleyicilere iki örnek—Dumitrescu’nun *Small Remote Quasar (I)*, ve *Pure Intuitive Spectral Music* adlı eserlerini—sunuyorlar ve dinleyicilerin sorularını yanıtlıyorlar. *Small Remote Quasar* isimli eser, viyola sanatçısı Cornelia Petroiu tarafından bilgisayarda hazırlanmış bir eşlikle birlikte icra ediliyor. (OT)

İLERİ MONTAJ ALANINDA YENİ DENEYLER: MÜZİK VIDEOSU ÜRETİMİ DENEYİMLERİ

Brian O’Reilly

Video art sanatçısı Brian O’Reilly ve besteci Curtis Roads, birlikte gerçekleştirdikleri ve görsellik ile bilgisayar müziğini bir araya getiren çalışmaları bağlamında uyguladıkları deneyleri ve edindikleri deneyimleri dinleyicilerle paylaşıyorlar. (OT)

MİSTİSİZMİN MÜZİKSEL MEKANİĞİ: MESSIAEN’İN “ABIME DES OISEAUX” İSİMLİ ESERİNİN İCRAYA DAYALI BİR ÇÖZÜMLEMESİ

Tamara Raatz

Zamanın Sonu için Dörtlü ne savaşla ne esaretle ne de insanın insana insaniyetsizliğiyle ilgilidir. Bu parça tamamen Tanrı’nın eseri ve İsa’nın ihtişamıyla ilgilidir. Burada karanlık yoktur. Burada acı yoktur. Burada öfke yoktur. Bunların yerine, güç, ışık, kozmos ötesini hissetme, huşu ve sonsuz sevinç vardır.

Dörtlünün üçüncü bölüm başlığının tercümesi “Kuşların Uçurumu”dur. Messiaen bu harekete ithafen şöyle der: “Yalnızca klarnet. Uçurum hüznü ve bitkinliğiyle zamandır. Kuşlar zamana karşıdır, onlar bizim ışık, yıldızlar, gökkuşakları ve coşku şarkılarına olan tutkulu arzularımızdır.”

İcraya dayalı bir çözümleme yoluyla, bu bölümdeki yaratıcı tını kullanımını, bölümün içerdiği anlamla olan ilişkisi ve klarnete uygulanışı bağlamında tartışıp örneklendireceğim. Messiaen, hem klarnetin sunduğu gürlük olanaklarına bakışı açısından, hem de perde uzamının aşırı uçları arasındaki gidiş-gelişlerin ve aralıkların oluşturduğu tınısal değişimleri kullanmadaki yaratıcılığı açısından yenilikçi bir besteci idi. Ayrıca, bu eserinde geleneksel olmayan modal gamlarla, hem Batılı olmayan hem de ortaçağa ait müziklerden özümselediği ritmik teknikleri bir araya getirmiştir.

Ses renklerine yoğun bir ilgi duyan Messiaen, ilham kaynağı olarak aynı zamanda doğal dünyaya – özellikle kuş şarkılarına – yönelmiştir. Bu eserdeki spektral müzik kullanımının görsel ve işitsel açılardan irdelenmesi, ve bölümün içerdiği yedi müzik kesitin oluşturduğu simetrinin tartışılması yoluyla, müziğin nasıl işlediği – yani mekaniği – Messiaen’in din felsefesi bağlamında ortaya konacaktır. (TR)

...of one sinuous spreading...: TINI, YAPI, VE MÜZİKSEL SEÇENEK ÜZERİNE BİR İNCELEME

Paula Matthusen

İstanbul Uluslararası Spektral Müzik Konferansı’nda *ongoing...* (“süren”) isimli hazırlanmış (*prepared*) piyano ve canlı işleme (*live processing*) için yazılmış eserimi sunmak istiyorum. Bu eser, değişken karmaşıklığın müziksel spektrası ile müziksel seçim ve yapı arasındaki ilişkiyi araştırıyor. “ongoing” bu araştırmayı sağlayabilmek için kendiliğinden hücrelilik kavramı üzerine kurulmuştur; öyle ki, müziksel yapılar piyanistin icra etmeyi seçeceği malzemenin spektrasından meydana gelecek şekilde yaratılmışlardır. Piyaniste beraberinde gezinebilmesi mümkün olan bir dizi müziksel rota sunulmuştur. Bu rotaların herbiri farklı bir sona ve böylece birbirleri ile çelişen müziksel sonuçlara varırlar. İcracı yolculuğuna bir nota veya bir akor seçerek başlar. Örneğin, eğer icracı daha önceden hazırlanmış (*prepared*) notalar içeren, dolayısı ile inharmonik ve karmaşık frekanslar meydana getiren bir kümeyi çalarsa, tek bir notayı çalmayı seçerek başlayacağı müziksel yoldan farklı bir yolda ilerlemiş olur. Bilgisayar seçilen bu tınıyı Max/MSP programına kaydeder ve belli işlemler ve dönüşümlerden sonra kendisine sunulan frekansların ne kadar karmaşık müziksel sesler içerdiği konusunda çözümlemeler yapar. Piyanistin bir sonra yapacağı seçimleri bilgisayarın çözümleme ve işlemleri belirler. *ongoing* tınıyı dikkatle göz önünde bulundurma ve müziksel spektrayı çözümleme açısından spektral müzikle benzer. (PM)

PİYANO DOĞAÇLAMASINDA TEKNİKLER VE YAPILAR

Matthew Goodheart

Doğaçlama yapılan piyano müziğinde geleneksel bir yöntem olan tuşların kullanılmasına ek olarak çalgının gövdesinin, kenarlarının, tellerinin, ses tahtasının, vs. kullanılması oldukça sık başvurulan tekniklerdir. Bu tekniklerin bir standardizasyonu yoktur; aslında bu tekniklere ait o kadar çok çeşitlilik vardır ki bu durum doğaçlama yapan icracının bireyselliğini en çok zorlayan ifadelerden birisidir. Ben, piyanonun sağ pedalının değişik kullanımları; bir telden belirli doğuşkanların elde edilmesi; (pedala yapılan) bir atak sonucu elde edilen tınlar gibi piyanoya dair birtakım teknik yaklaşımları geliştirmekteyim. Bu sunum piyano tınları kullanılarak yapılan doğaçlamaları tartışmakta ve İstanbul Spektral Müzik Konferansı'nda yapmış olduğum doğaçlamada kullandığım teknikleri açıklamaktadır. (MG)

SPECTRAL MUSICS OLD AND NEW

Robert Reigle

The concept of spectral music can no longer remain limited to the genre spawned by Romanian and French composers beginning in the late 1960s. Rather, the importance of timbral thinking around the world and across genres, as the articles and recordings herein demonstrate, suggests a need for us to revise our concept of spectral music to encompass a far broader range of musics. This new thinking may well spur the process of increasing the importance of timbre within the very concept of music, a process of restoring something that had been lost to the West, according to thinkers such as Dane Rudhyar (1982). By this change in concept I do not mean merely paying lip service to timbral thinking, but instead integrating the awareness of timbre into all levels of music discourse, in a way equal to that on pitch, rhythm, and harmony. The knowledge and awareness to achieve this will take time. It will involve people breaking away from long-ingrained patterns of listening, and of thinking about music. It will involve bringing to life new experiences of resonance and tone, whether these experiences be apperceived through the intellect, the body, or the emotions. Some of the groundwork has already been laid. For example, Iancu Dumitrescu speaks of the phenomenology of such experiences; Giacinto Scelsi spoke of liberation and the spherical nature of sound (Scelsi 1981); and much has been written by composers who foreground timbre.

The Istanbul Spectral Music Conference continues this endeavor by redefining “spectral music” to encompass any music that foregrounds timbre as an important element of structure or musical language. We initiated this holistic approach to the idea of spectral music to make explicit the importance of timbre as a near-universal concern of music-making, and to establish timbre as a central and applied component of musical discourse. By including ethnomusicologists, we acknowledged the vital role of timbre throughout the world history of music. At the same time, we recognized the importance of the Spectral School originating in Romania and France as both a catalyst spurring dialogue across disciplines and one of the major aesthetic

movements of our time. With the papers presented herein, we hope to shed new light on the history of spectral thinking, in the broadest context possible.

The timbral concerns of prehistoric man revealed through architecture (Watson and Keating 1999), oral traditions around the world, music theories of the ancient civilizations, and the unique approaches taken by each composer at this conference all contain the fruits of timbral exploration. Spectral thinking epitomizes the concept of diversity in unity, both when heard as a set of historical phenomena and via the thinking process that parses the multiplicity of a single sound.

Every human being is a spectralist. Through the acquisition of spoken language, we master the complexities of vowel formants, and distinguish a variety of spectral regions for consonants. While most of us create speech spectra at an average level of competence, virtuosos such as auctioneers, for example, produce extremely rapid iterations of precise spectral sets (words) around a single pitch. Words take on a double timbral character when used in music (see the articles herein by Nilgün Doğrusöz, Cornelia Fales, Eve McPherson, and Robert Reigle). In addition to recognizing words, our ear categorizes timbre very quickly, sometimes before pitch (Fales 2002: 92, n.6). Taking advantage of this remarkable and complex skill, musicians throughout history have developed ingenious methods to shape timbres for spiritual, aesthetic, and entertainment purposes.

Some musics around the world clearly foreground timbre, and these may unambiguously be called “spectral musics.” How have composers¹ and performers foregrounded timbre? Spectral musics exemplify at least three interrelated methods, each of a different category: sound production, sound perception, and performance quality. The first method is to change timbre while at least one other aspect remains the same. The unchanging percept may be a pitch, an ornament, a phrase, a melody, etc. A clear example of this is overtone singing wherein the singer creates a melody in harmonics

¹ I use “composer” in its most generic sense: one who created a piece of music. Although many cultures may not have an equivalent term, the common sense view that some person created each musical work is the important factor here. Certainly, there are exceptions to this definition, not least among spectral forerunners such as Scelsi, who insisted that he was not a composer. In this Introduction, the term “composer” is free from the idea that composers must set their works in notation, or that “compositions” are limited to pre-meditated works (past-composed) as opposed to those created in the act of performance (present-composed). Improvised, notated, and oral traditions are equally “composed.” For broad-ranging perspectives on this topic see TOKUMARU and YAMAGUTI 1986.

while sustaining a pitch. From Europe, Arnold Schoenberg's *Farben* from Five Orchestral Pieces (1909) explores the idea of timbral change on a single five-part chord, while other works of the Second Viennese School contain the idea of the melody or motive as the unchanging unity colored by rapid timbre change. Secondly, musicians may foreground timbre by creating difference. In order for listeners to notice timbre, the sound must differ from what is expected.² Composers may work with timbre to create sounds outside the mainstream of the repertoire. As repertoires change, what constitutes inside and outside also change. Finally, spectra may be foregrounded through the virtuosity often necessary for producing timbral changes. This virtuosity may stir emotions, create difference, or embody spiritual power. It appears in musics ranging from Tuvan overtone singing to Salvatore Sciarrino's *Sei Capricci* for violin (1975-76) and Helmut Lachenmann's "musique concrète instrumentale" (Mosch 2001). People watching such performances may participate vicariously in the energy required to produce the spectra, an energy that may or may not come through in sound-only recordings.

World spectral musics may be categorized into those using inharmonic sounds, harmonic spectra, or a mixture of both.³ The most familiar examples highlighting inharmonic sounds are the many African musics using buzzing sounds, and the whole genre of noise musics. Spectral musics blending inharmonic and harmonic sounds encompass the carefully produced timbres of gamelans, whisper musics, and music used in the Ngaveo ritual from the Vitu islands of West New Britain Province, Papua New Guinea. There men carefully select particular types of orchid leaf and coconut to construct an instrument that subtly modifies the timbre of their voices, transforming them into spirits' voices (Balane and Gima 1998: 609). Musics emphasizing different harmonic partials of tones constitute a major international musical practice that has achieved the highest level of awareness. Examples include jew's-harp and mouth bow musics; the Sardinian *quintina*; didjeridus; voice

² My idea here has been shaped by the work of Gregory Bateson (Bateson 2000).

³ In a landmark article, Cornelia Fales delineated three types of spectral manipulation: "timbre anomaly by extraction" and "timbre anomaly by redistribution," where the changes are harmonic; and "timbre juxtaposition," where the changes are formant-based (2002: 65-78). I propose a slightly different schema in order to give greater emphasis to musics focusing on the manipulation of inharmonic partials, such as shaded noise.

modifiers; wind instruments using natural harmonics; and the most well-known of all, overtone singing.

A recording of overtone singing appeared on the American market as early as 1929 (Miles 2000), and one of vocal timbral manipulation—identified as such—in 1956 (Wolfsohn 1956), but these did not reach a wide audience. Public awareness of the possibilities of overtone manipulation increased dramatically via recordings of Tibetan Buddhist chant, beginning in the 1960s; Mongolian music from the 1970s; and Tuvan, European, and American overtone singers in the 1980s (Reigle [In press]). New “discoveries” of overtone singing from unsuspected locales continue to appear, including music from West Papua (Irian Jaya, Indonesia) and Kurdish *dengbej* singing with its two-pitch overtone melody produced from vowel melismas.⁴

The spread of knowledge about timbre had been predicted by one of the forefathers of the Spectral movement, Giacinto Scelsi, who in 1954 said that “it will be possible to perceive [the complexity of harmonics] before the end of the century” (in Reish 2001: 285-86). Scelsi was clearly influenced by world musics, concurring with and perhaps inspired by Rudhyar’s ideas (Reish 2001: 101-05). Rudhyar wrote extensively about tone quality and resonance, and their paramount role in the musics of ancient civilizations, Asia, and ritual (Rudhyar 1979; 1982). It is not surprising, then, that the same person who coined the term “World-Music” in the 1920s (Rudhyar 1932: 289; see also Oja 1999: 134) also published the first spectral score (Rudhyar 1922; see below).

Later on, the composers who forged the new genre of Spectral Music also drew from ancient and world traditions. For example, Iancu Dumitrescu was influenced by folklore in the development of his concept of diagonal sound (see *infra*), and Horatiu Radulescu philosophized about natural resonance in musical ideas from Pythagoras, Hinduism, and Byzantium (Gilmore 2003: 105). In more concrete borrowings, composers such as Tristan Murail (see Tüzün *herein*), Gerard Pape (2003), and Nicola Cisternino (2003) have used micro details of world spectral musics in some of their compositions. Identifying this common concern for timbre amongst both world traditions and pan-European composers (including those working in the

⁴ I recorded overtone singing in the Irian Jayan highlands in 1993; more recently, French researchers released a remarkable set of recordings, *Les Dani de Nouvelle Guinée: Polyphonies de l'Âge de Pierre* (2001). One of the clearest examples of Kurdish overtone singing is Mirazê Egît’s “Were Yo Yo (Siwarê),” recorded in 1963 at Radio Yerevan, on *Kilamên Yêrêvanê: Emê Gozê* (2001).

jazz/improvised music continuum) in no way lessens the achievements of either group.⁵ Nor does it attempt to dictate a dogmatic categorization that in the end may proscribe thought and development. On the contrary, only by understanding spectral thinking around the globe and throughout history can the diversity of mankind's musics and the beauty of the individual work be fully appreciated.

Just as some traditional and art music composers around the world have foregrounded timbre for millenia, European composers also began highlighting timbre centuries ago, though generally in isolated instances and to a limited extent (see Van Herck *infra*). One striking example foregrounding a variety of timbral effects is Johannes Ockeghem's notorious *Deo Gratias*, composed in the 15th century. That work spoiled its composer's reputation (Lowinsky 1969: 156) and did not receive its world premiere recording until 1995(!) (Ockeghem 1995). *Deo Gratias* is a 36-voice canon that layers the vowel (i.e. timbre) sequences of its two-word text, setting up a sustained wash of sound through which consonantal plosives (D, G, T) and fricatives (S), each with a different spectrum, emerge in unpredictable patterns, like stars in the night sky.

As with composers from every culture, pan-European composers have necessarily dealt with timbre according to the resources available to them. As early as 1922, Rudhyar published the very first spectral score, a brief example consisting of fundamentals and specified changes in the strengths of individual overtones over time (Rudhyar 1922: the one-page score appears unnumbered, between pages 116 and 117). The technology to realize his composition did not exist then, and his innovation went (and remains) rather unnoticed.

With this history in place, the confluence of four new developments produced the zeitgeist in which the Spectral School developed in Europe. In addition to (1) the new-found access to world musics, composers operated in a dynamic milieu of (2) the exploration of extended instrumental and vocal techniques, (3) technological advances (in both analysis and sound production), and (4) metaphysical change. By focusing on the physical, perceptual, and aesthetic attributes of timbre, the Spectral School of

⁵ I use the term "pan-European" in the sense of wholeness of the group or style (not as the idea of a contiguous Europe), to refer to music by composers around the world whose music demonstrates influence from the European art-music tradition. This term, brought to my attention by George Emanuel Lewis (1996: 91), provides a less hegemonic/hierarchical alternative to "Western," while avoiding the negativity of "non-Eastern" (which I had suggested in an earlier article [Reigle 1996: 65]).

composers produced new pathways through the interior of sound while at the same time developing novel compositional languages that address one of the most elusive aspects of musical discourse. Originally a stylistic and ideological trend spearheaded by the composers and performers associated with l'Itinéraire in Paris in the early 1970s (but with extensive precedents, including the Romanian school beginning in the late 1960s), today spectral music and the insights it has spawned are important areas of discourse for ethnomusicologists, theorists, systematic musicologists, composers, and performers.

The importance of the spectral works of the Romanian and French composers of the early 1970s lies in their bringing to the public's attention the very possibility of focusing on timbre as a primary structural or foreground element. Although the many recent predecessors—from Claude Debussy to John Cage; through Henry Cowell and Henry Eichheim; to Edgard Varèse, Giacinto Scelsi, and James Tenney (see Wannamaker herein)—had already laid a groundwork of both compositional and verbal discourse, the Spectral School gathered diverse concepts under a single rubric, thus endowing spectral composition with a newfound legitimacy that could no longer be ignored.

Despite these advances, timbre remains the vast *terra incognita* of music scholarship, a situation reflected in the size of its *Grove Music Online* article: a single paragraph (Campbell 2001), as opposed to extensive entries for other basic components of musical sound: 34 pages for pitch, 73 for rhythm, and 10 for dynamics. Scholars, composers, and eventually the public at large have neglected timbre because of a widespread assumption that music consists of pitches and their relationships; the complexity of timbre perception; inadequate terminology; and the concomitant failure to develop practical systems of timbre notation. The inherited assumption that pitches and their relationships are sufficient to represent music is revealed, for example, through the many published transcriptions of indigenous melodies (such as Native American songs) for the piano. Although Asian musicians have produced some remarkable timbral systems, such as the *jian-zi-pu* tablature for playing the *qin* (LIANG 2002: 55), and the rich palette of vocal timbres elaborated by Arabic theorists (Shiloah 1993 [1991]), those concepts have not inspired parallel structures in the West.

One of the largest lacunas of timbral discourse is that concerning jazz/improvised music (addressed by papers and recordings herein). The foregrounding of radical timbres has always been a hallmark of the jazz/improvised music continuum, from the vocal multiphonics of blues singers to the explorations of noise and electronic sounds by the “lowercase

music” artists. Having once been a popular music, jazz was neglected by Western academics until the late 20th century, thus fomenting uninformed discourse such as Bruno Bartolozzi’s naïve claim that woodwind multiphonics were a new technique (1974 [1967]).

All sound has timbre, yet this very ubiquity has led us to marginalize it. Often, after initially identifying the timbre of a sound, one may quickly assume its invariance (or fixed identity), and move on to focus on pitch, rhythm, harmony, and temporal structure; likewise, scholars have tended to focus on the latter at the expense of timbre studies. The great comparative musicologist Erich M. von Hornbostel, for example, excluded timbre in his definition of melody as “motifs, not tones” (1909: 1035, quoted in Blum 1992: 167). Likewise, the most recent anthology of ethnomusicological analysis (Tenzer 2006) does not include an article on timbre because most ethnomusicologists continue to focus on pitch, rhythm, and structure in their music analyses.

We have had the term “timbre” for two hundred years, but did not develop a discourse around it anywhere nearly as extensive as that on pitch, harmony, and structure. Speaking about “spectral music,” on the other hand, has provided a shock to everyday thinking about music, calling attention to the inner life of every sound, even of the shortest duration. This recent term, “spectral music,” provides a moniker for the timbral concepts of our time in a way that “timbre” by itself cannot. I hope that our redefinition of spectral music—to include all musics around the world that foreground timbre—will help listeners reap the benefits of discovering the full complexity of living tone.

THE CONFERENCE

Filled with inspiration from working with Iancu Dumitrescu and Ana-Maria Avram in August 2002, I suggested to Pieter Snapper the possibility of hosting a spectral music conference at the Center for Advanced Research in Music (Turkish acronym: MIAM), Istanbul Technical University. Although he liked the idea, I sensed a feeling of impossibility, given the difficulties of procuring funds, negotiating local bureaucracies, and enticing participants. The next day, however, he came up to me full of excitement, saying, “We can do it!” He had realized that through his formidable network of composer and performer friends, he would be able to invite the most prominent leaders in spectral music, including Tristan Murail and Joshua Fineberg. Likewise, Michael Ellison procured the participation of some of the world’s finest musicians from Turkey and abroad, such as Kâni Karaca

and Helen Bledsoe. Our original, improbable idea turned into a remarkable event, marking an expansion of the concept of spectral music in the international arena, both geographically and by linking the world's timbral traditions (spectral musics) with the movement amongst pan-European composers (Spectral Music).

We took as the central idea of the Istanbul Spectral Music Conference, then, the exploration of musics that demonstrate a special concern for timbre. In other words, we did not limit the concept of spectral music to the French school and its predecessors, but rather included the many musics that incorporate conscious manipulation of timbre, even when no vocabulary existed with which the musicians could discuss their actions. In keeping with the expansive viewpoint prevalent among leaders of the Spectral movement, the conference provided a forum for composers, performers, and scholars to present their work, debate current issues, and explore the confluence of timbral perspectives across disciplines.

Among the highlights of this conference was the panel discussion with Ana-Maria Avram, Iancu Dumitrescu, Cornelia Fales, and Tristan Murail, moderated by Joshua Fineberg. The Conference Organizing Committee was especially delighted to have been able to present 11 concerts, including a dozen world premieres written for the Conference, and Turkish music, both traditional and modern. We included Turkish music both in the Conference and on the compact discs accompanying this publication, because of the unique approach to timbre its musicians have developed over the centuries, and because many of the participants and reader/listeners may not be familiar with the varieties assembled here.

The Istanbul Spectral Music Conference brought together, for the first time, leading figures in timbral composition, ethnomusicology, theory, performance, and improvisation. Important predecessors of this conference had typically focused on perspectives from a particular discipline. For example, in 1985, a colloquium on spectral music was held at the Institut de Recherche et Coordination Acoustique/Musique, and in 1999, Thomas Solomon organized a panel on timbre at the Society for Ethnomusicology Conference (a portion of which appeared in a joint article by Steven Feld et al. (2004)). More recently, the Second Conference on Interdisciplinary Musicology was devoted to "Timbre in Composition, Performance, Perception, and Reception of Music" (held in Montreal, Canada, March 10-12, 2005).⁶ The Istanbul Spectral Music Conference of November 2003,

⁶ Of course, as part of the general dialogue, musicians have presented many spectral topics in events such as Internationales Musikinstitut Darmstadt and the

then, marked the beginning of a new movement towards a broader view of musical spectra.

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ANALYSIS, PHENOMENOLOGY, AND ETHNOMUSICOLOGY IN SPECTRAL MUSIC

Panelists: Ana-Maria Avram, Iancu Dumitrescu, Cornelia Fales,
Tristan Murail

Moderator: Joshua Fineberg

Joshua Fineberg (JF): I think since most of your faces look very familiar, that you've been here for most of this. I'm not going to introduce everyone; you know who these people are already. And because things were running a little bit late, I think we should just jump into it. I guess where I wanted to start this discussion is, especially focusing on composers, where each of them started. Because in the case of Tristan Murail and Iancu Dumitrescu, they came at this very early in the game; there weren't other people doing this. So my first question to the two of you would be, when was it you first started thinking that you might work directly with acoustic materials as the basis for building or modifying your musical language?

Ana-Maria Avram (AMA): Is there a date you can ...?

JF: No, I don't mean a date, I mean more conceptually.

AMA: Now a little bit—, now you make a step and you are obliged to make the other one, because this is also dramatic, even tragic, that when you make a step this obliges you, isn't it? You don't realize how important it is. But after that you are obliged to the step that follows, which is determined by the previous one, and so on.

JF: I guess my question, to be more specific, where did it come out? So for example, I think we all know some of the very early proto-spectral things that happened, like the Per Nørgård, *Voyage into the Golden Screen* and other things, or the [André]⁷ Jolivet, imitation of the organ stops, and those things. How much were those things in your mind in the very early days, or what was it that led you to it?

AMA: 60s, for Iancu it was the 60s. For example, he composed the string quartet *Alternances* in 1968, and in *Métamorphoses* for clarinet [1968], one

¹ [Square brackets [], indicate editorial additions; braces {}, mark additions provided by Ana-Maria Avram on behalf of herself and Iancu Dumitrescu. Eds.]

of his earliest pieces, a combinatory musical thought is already partially substituted by a transformational thinking. But it is not still a spectral music, it's a kind of proto-spectral music. [To Iancu Dumitrescu:] In the early 60s or the beginning of the 60s?

Iancu Dumitrescu (ID): The beginning.

JF: And so at what point did you start to make the transition from thinking about just timbre and mass and fusion to ...

ID: I studied folk music, especially Romanian folk music. And it's very interesting because Romania has a very special geographical position. It's a territory of transition between Western Europe and East.

AMA: Yes, you can have sometimes even the echoes of something like sitar music, like North Indian music.

ID: It's interesting to note that Béla Bartók was the first, I think, very important genius who discovered this richness.⁸ And for me it was like a natural contact to this kind of roots.

JF: And at what point did it make the change from working with timbre, sort of, experimentally and intuitively, to trying to understand more directly how frequencies and spectra might be made up in a more theoretical way so that you could manipulate it?

ID: {At the beginning,} it was only an ambition, a subjective ambition. I was influenced by the fact that the Dada movement was born in Romania, also many others: Brancusi, for example, in sculpture; {Stéphane Lupasco—a very original philosopher living in Paris, who was one of the first to include the microphysical experience in a philosophical system. As for me, in analogy with physics, spectralism at the microtonal level corresponds to the microphysics revolution.} Xenakis, for example, Ligeti also. Many composers were born in Romania, and that was also a side of my intellectual ambition.

Tristan Murail (TM): That's interesting because when I'm asked this question I often refer people to exactly the two men you just said, Xenakis and Ligeti, because they brought another way of thinking about music, as masses of sound, of structure of sound, and this sort of thing.

² {of the ancient Romanian traditional music and its connections with Eastern music: *rāga*, *makam*, etc., and also its connection to natural harmonics. There is a large-scale use of concrete harmonic sounds in Romanian folk music, very primitive instruments that are producing specifically harmonic sounds, multiphonics, micro-intervals, etc. To Bartók we owe the idea of "acoustic scales," when it comes to Romanian folk music. This particular scale is completely deduced from the natural resonance of the first 11 harmonics, with its specific non-temperate intonations.}

JF: Actually, and I don't want to keep insisting on this, but I think that's the transition that is easier for people to see, how this music comes out of Ligeti and Xenakis. I think the transition that's harder to be aware of exactly how it produced itself is, when that working with masses and with timbre, which lots of people did at that time, took that further step and started actually applying direct knowledge of frequencies and acoustics. That step didn't happen in so many other composers who were also working with masses and timbres.

AMA: Sure.⁹ It's another influence about which Iancu didn't refer yet, about his musical conception. It is phenomenology and Sergiu Celibidache, who influenced him and, later, also myself, enormously. Paradoxically, Celibidache in his last years didn't perform contemporary music; he did a lot when he was younger, but he later became very critical about most contemporary music. {His criticism was based on the very sharp intuition that most contemporary music doesn't transcend the physical sound reality.} But in his thinking he was an experimental thinker about music, an experimental practicing musician, I think. Because the way that he assumed acoustics, and the way he speaks about how acoustics is influencing music *hic et nunc* [here and now], it's very important. In fact, it's a spectral conception about music, a phenomenological and balanced spectralism also.

JF: And for you, Tristan?

TM: Well, as Ana-Maria said, it's hard to tell today. It's a process, in fact.

JF: Actually, what I mean is, if you could describe a little bit the process.

TM: Yes, in fact I did yesterday, so I don't like to repeat what I said yesterday. But I think I mentioned the first experiments by Gérard Grisey in 1974, a piece like *Périodes*, where he consciously used the spectrum of a trombone in order to build the form of a piece. And myself, I was more interested in emulating an electronic phenomenon in my music at that time, so I used ideas derived from electronics, like feedback loops, ring modulations—in fact spectroids; it's an electronic thing. I must say that we did not have tools to explore spectral data; it was very hard to get any information about timbre—precise information about timbre, I mean.

JF: When Grisey went to Germany and worked on acoustics, he did have access to an electronic spectrogram, right?

TM: I don't know, but you must understand that the tools at that time were not that practical, you know, and they were devised for scientists, not for

⁹ {The consistency and elucidation of some ideas, which were in the spirit of the time: that makes the difference between geniuses and others. But I'd like to come back to your first question.}

musicians. So it was very hard to get precise information. So I think that had a part in the evolution. And on my side, the first piece I really used instrumental spectra in my music to build a musical form was in 1980, '81, '82 when I wrote *Désintégrations*. I had access to IRCAM and then I found there was a big database of instrumental spectra that had been analyzed previously. And then I could use that as the basis for my composition. It was the first time I really could do something consciously; before that, it was like makeshift stuff.

{AMA:¹⁰}

JF: I think to try and pull ethnomusicology into this a little bit. One of the

¹⁰ {If you allow me, I think I can identify one very important point of differentiation—even of opposition—between the French spectralist school and the Romanian artists' approach, as Tristan touched on this point. One of the most striking and irreducible problem when working with spectra is how you can build with those transitory phenomena. How you can reiterate them enough alike to be perceived as identical—enough identical to build something with. In other words, how you can build a form, a musical construction with such material—very fragile because irrecurrent. Then, as Tristan said, French composers used spectra to build, coming from spectra, another reality, a parallel one. So, with this approach they composed an amazing, extraordinary music, where structuralist thinking coexists in a synthesis with newer ideas. Using, though, spectral analysis as an analogic model for a macro-form. In fact, in an oversimplified way of speaking: they first were analyzing real spectra, with more or less scientific electronic laboratory tools, then rebuilding, reconstructing in the musical form, orchestrating, and arranging the result of their analyses. With, as a result, a new spectral reality, where real, fundamental sound combined in an analogy with a real pre-analyzed spectrum. So they created a different (step of) sonic reality.

On the contrary, Iancu Dumitrescu, completely assuming the use of those transitory phenomena (overtones, multiphonics, etc.), used them with predilection, in a consistent musical universe. Then how did he solve the problem of musical construction? Just moving away from the combinatory, structuralist musical thinking, to a transformational musical language. This is essential, I think. Then if spectral material can't be approached with structuralist tools, it certainly can be exploited in a transformational musical language, as it refers to transformational realities. In other words, spectral material can be obtained and perceived only in a continuous transformational musical language. In fact for me, those were the two different choices to be made: the first of an analogical model of sound spectra, rebuilt in the French Spectralist School; the second, the use of concrete partial sounds—overtones, multiphonics, beatings, and all those “transitory phenomena” in Romanian spectralist music—which had implied a different apperception of musical form, and renouncing the so-called structure in favor of the perpetual transformation of sound material.}

things that seem quite... it's certainly not unique to spectral music, but it's a common element, is the use of sounds from folk musics and ethnic musics, not necessarily the structures and forms from them, but a real concern with sounds that are different, and by extension with sounds that come from cultures. So I wonder first, Cornelia, if you could just talk a little bit about the range of the kinds of musics in the world that really focus on timbre, as a primary element as opposed to pitch, or rhythm, or scales.

Cornelia Fales (CF): Sure, I probably should limit what I say to Africa because that's where I'm a specialist, although I certainly am well exposed to music in most places of the world. And I would say probably as a percentage, I would say maybe a third of the music that I'm aware of and I'm knowledgeable about is at least equal—puts equal importance on timbre as on pitch. Sometimes with musicians not realizing that there's a difference between the two of them really, that if you change one the other changes immediately anyway. And you know, lots of times, that timbre takes the form of certain kinds of noise, but if they were a series of sounds with different kinds of noise that were made all with acoustic instruments, and that has been used as a timbral element, just for ever; it's an essential part of music in those cultures. And then there are cultures where the timbre is very much a theoretical part of music as well. I'm thinking of certain classical Indian genres, for example. Some Chinese and other Asian cultures have a classical form that involves timbre specifically and deliberately.

JF: I know that in *qin* music they have all these descriptions or poetic terms for 15 or 20 ways of plucking the string according to the timbre you're supposed to get. They're things like heavenly bells, et cetera, but they mean something specific.

CF: But the interesting thing is something you mentioned, which is that in all the research I've done (and I keep looking for big, big exceptions to this) all of the musicians using timbre specifically, with or without notation, talk about it in terms of what you do to get it, not in terms of the sound itself. So, as Joshua just said, how you pluck the string, not the sound you're waiting for.

JF: Except maybe the Sardinian polyphony, right?

CF: Yeah, those vocals.

JF: Because they specifically know the *quintina* that they want to bring out.

CF: That's right, that's right.

JF: There's a kind of polyphonic singing they do in Sardinia in four parts and they try to tune it perfectly so that their partials will line up and reinforce extra notes that are above what everyone else is singing. They make this sort of whistling fifth voice, *quintina*, which they think of, I guess theologically,

as the Holy Spirit singing with them.

CF: For example, there is a genre of music in southern Africa where they play some panpipes that are very clearly odd harmonics. They don't know that this is what they're doing but the panpipes produce odd harmonics and someone else sings an octave higher, adding even harmonics. They do this with a number of instruments and they don't know why it is that only certain instruments have this great effect. When you say, "Why can you do this with panpipes, why can't you do it with this clarinet, why can't you do it with this harp, for example?" they just say, "well, we just want one sound, and if we play it with the harp we get two sounds, you play it with the panpipe you get one sound." And so they're very clearly hearing something that we know about but not in the terms we understand. So there are lots of similarities.

JF: Could the three of you maybe talk a little bit about how you've used ethnic musics?

AMA: In fact, both Iancu Dumitrescu and I are trying to find a non-figurative way, not illustrative, of making spectral music. We never refer to folk material.¹¹ Otherwise, we are not composing figurative music. Referring to folklore would be a figuration. We are very far beyond that.

JF: And Tristan?

TM: Ah well, the other thing I've done, I've used sounds from other cultures which I have analyzed and from which I've derived timbral or harmonic structures. So it's not [folk music] of course, but in the piece called *L'Esprit des dunes* I've used several sources of sounds coming from Mongolia and Tibet, especially the Mongolian diphonic singing that's called *xoomij* (some of you're Turkish, right? [laughs]), where the singer produces harmonics—very strong harmonics—with his voice, and for the melody, it's produced by the harmonics inside the voice, not by a succession of sounds. So this is a very important spectral concept. In a way, the singers have produced the first spectral music in the world since the technique comes

¹¹ {Even though folk music was one of the first fields where we discovered the consistent use of overtones, we don't use folk music. There can still be found a certain relationship between both. For example, Iancu Dumitrescu used, in the *Movemur* series of works for different string instruments, the most general and abstract formative principles that build a generic Romanian folk music called *doina* (equivalent to Spanish *cante jondo*): the alternation of a fundamental sound (free strings in Dumitrescu's case, long pedal sounds in the folk music case), with rapid, unmeasured webs of overtones. But there wasn't any citation of folk music, just the use of very general, deduced musical principles.}

from very old times.

JF: I don't want to inject myself too much, but I sometimes have used some ethnic musics—not in any way you hear directly. In a piece in the concert tonight, *Veils*, a lot of the pacing of certain events and where changes in events come, actually came from the pacing in a particular Tibetan religious ritual, that I have a recording of, whose event succession interested me. But unless you saw the sketches, you would never have any way of hearing anything particularly Tibetan Buddhist about the piece. It's just simply a way of finding a succession of events in time that feels well paced to me, and taking advantage of it.

ID: I think spectral music is perhaps a conclusion of the ages, of musical history, of the culture of the sound, and I have this idea that in art, in painting, we discover the primitive force of that. In music, actually perhaps, in our period came the right time to emphasize this aspect of the primitive quality of the sound, the primitive force, the primitive artistic force of the sound. This very important connection, very truthful and very valuable, has to be made between the European culture and the roots of the folk music.¹² And these roots—it's the history of humanity for me. This is interesting, and for me also like an argument, against the excess of abstraction, of artificiality, often present in modern art. That is very phenomenological, I think, the point of view.

JF: How do you see the relationship in your music between timbre and form?

ID: It is very complicated [laughs]. We haven't [enough] time for this [audience laughter]. For me form doesn't exist. The form doesn't exist. It's an inner necessity of the material; it's a necessity of an idea, yes? I have an idea—I have a musical idea, an inspiration. To make it alive in sound—that is form and nothing else. At the beginning it's nothing, it's reduced, it's like a pill of something, it's very condensed, without any evolution in time, just an instant, but for developing this idea it's necessary to do something, to move, to act. The result of these actions, that is the form. A necessity, not the form as ...

AMA: A pre-established thing that is an imposition, a structuralist imposition.

JF: I guess what I want to get to is, even in the way things unroll—or let me phrase it another way. When you think of the musical material, do you think of it purely in terms of timbre or in terms of timbre as well as in terms of

¹² {This connection could be made only when we arrived at this spectral stage of musical history, I think.}

other things?

AMA: The problem is—you can't build with timbres because the problem is that timbre is a transitory phenomenon. Noise is also a transitory phenomenon that in "classical" musical thinking you eliminate first of all from something that can be reproduced with an insurance to build a form. This is the problem. This is why things are so delicate, in fact, and so ...

ID: Complex.

AMA: Complex and delicate at the same time.

ID: And dangerous.

AMA: And dangerous, yes. You are like a dancer on a wire without any net. Yes, but you can do otherwise. {Then form is deduced, as I already said, from a transformational way of thinking. It couldn't be otherwise. This made this material possible to exist. Only in development, in movement, though.}

CF: This brings up a topic that I've been thinking about all week and have mentioned to a few people, and now that I have the chance, I can ask you three this question. Tristan touched on it, as has everybody, when he said he used some Tibetan—I gather overtone or throat-singing or some diphonic singing—and that is, that we continue to talk about timbre and yet most of the effect (I have to say that my spectral music background is largely pretty unimpressive; however, I've listened to a lot of it and this is the first weekend that I've had a chance to really hear what goes into it) and everything that I've heard is pitch. That is, as soon as you take timbre apart into its spectral components it's not timbre anymore, it's pitch. And so, it makes me very curious as to how the pitch aspect actually And in fact physchoacoustically to hear an overtone is distinctly to not hear a pitch, to hear an overtone is distinctly to not hear timbre just because of the way the gestalt of how it works. If you're hearing it as pitch, you're not hearing it as part of the timbre, so I'm really curious in the sense in which timbre ...

ID: Very true!

Audience: [Laughter]

TM: I think I can add something very important in this. It's transitory, or you said something like this? Transitory phenomenon, and timbre, you know, is very much like this. It's not stable, and you can hear it or look at it in different ways. So you can look at it in the aspect of pitch, or ...

AMA: {In fact, it's about considering sound as a whole. Spectral music doesn't look at sound in its classified parameters, in terms of pitch, duration, intensity, and timbre, but as a whole phenomenon.}

TM: Oh, yeah, of course, yeah, the education is very important. For instance, you can take, you mention organ, an organ sound, or even a cello,

you play a low sound on a cello, and whatever, and it's a cello sound. But you can hear it and you can listen to it very accurately and you will hear the overtone, and so it becomes pitch or harmony. So it's ambiguous, in fact timbre doesn't exist in a way. It's like common ground where everything comes together. So timbre is amplitude, it's not just pitch. It's amplitude, pitch, it's time.

CF: And yet, it really doesn't exist; we use it expressively independently of the other.

JF: But I would say that for Tristan and me, we **don't** use it independently. When we're changing pitch, we're changing pitch **to** change the timbre, and when we're making alterations to dynamics, we're making alterations ...

TM: Or vice versa.

JF: Yeah, that in fact the reason that the pitches are established in the way they do is, we don't see there as being a clear line between harmony, timbre, and pitch, these are all aspects of the sound which can be manipulated with more or less precision according to the instruments and the ways of playing.

CF: Are you talking then about timbre?

JF: The global timbre.

CF: So the texture, then.

JF: No, no.

CF: There is a distinction between imitating spectral harmonics with colors because you're adding all kinds of extra harmonics, right?

JF: Yes but you're making other timbre, you're making orchestral timbre. Grisey used to talk about orchestral synthesis, and that you would synthesize a sound with an orchestra. This is why people go back to Xenakis and Ligeti, the idea of fusion.

AMA: But they're playing with real sounds—fundamental sounds, not overtones, not multiphonics.

JF: Yes, absolutely, instead of using oscillators to synthesize sounds you use violins, and it brings in other things but also when you do real synthesis often you use noise sources or other waveforms and things that also bring in other components.

CF: Well, yeah, I suppose we're just talking about differences in language, because in this sense, in a strict—if we're going to talk this way—psychoacoustic sense, using timbre as an analogy, really, because ...

JF: You're using the structure of acoustic timbres as an analogy. Timbre is not an analogy. I mean, when you hear an orchestral piece, there's an

orchestral timbre, it's not analogy, it's a real timbre.¹³

CF: Depending on how you want to talk about timbre [laughs]. You might call it a texture, I mean it doesn't fuse into a unitary ...

JF: In Ligeti, it often fuses into a unity, to a unitary percept. You know that it's not produced by a single source but that doesn't mean it doesn't fuse.

CF: Right. This is all sounding very African actually.

Audience: [Laughter.]

CF: Okay. That was my question, and we could go on ...

JF: You know, I can do some more of this but I want to have some time actually for people to bring up some questions. I'll fill in if people don't have any, but if there are some questions that people here have, since we have everyone together which may not happen again, I would love that people would have a chance. Are there?

Audience #1 (Chris Arrell): How do the composers feel about spectral music becoming something of a school now?

TM: Well I think this happens only in America.

Audience: [Laughter.]

JF: Though to be fair one could argue, I think, that the term started being sort of consistently applied

TM: Ah the term, yeah.

JF: Well, how do you feel about that?

TM: Well, it's like everything else, I mean, in way you cannot teach composition, in a way. So I think you have to make a difference between techniques and style. So you can study and teach spectral techniques, because we know what they are, but when it comes to style, what composers make out of that, do out of that, that's a much more difficult issue and you have heard here, or will, lots of different pieces by different composers who have the same tag, spectral. In fact most of them, I'm not sure about that, and they are very, very different from each other. For instance, the music of [Hugues] Dufourt, I don't think is actually spectral although he's very interested in timbral phenomena. Or the music of Gérard Grisey—well, we started composing music together at the same time, there were some similarities between our styles but more and more we went in different ways. So that part of that so-called spectral music, well you can study, you can analyze, I mean, as you can for every kind of music, I suppose. To finish answering this question, I found that it's extremely hard to analyze this kind of music. Well, it seems that it's very hard, since we don't have much music

¹³ {**AMA:** Even the work is an analogical result of the analysis of another timbre, when it becomes music it becomes another—different, real timbre.}

terminology for musical styles, as far as now, at least. As equally, our students haven't been trained into these concepts. Musicologists are very stiff in the concepts like pitch, duration, timbre, and all these things that they think are precise notions and we think they are not, in fact. But when you have to deal with spectral music, where as I said before, everything in fact is contiguous, everything is a whole phenomenon, as what you said about Ligeti, I mean when you have an orchestral texture, which in fact is a timbre. How do you analyze that, you know? Either you look at the way it's been conceived and built (so this is analytical) and you analyze the generation of the thing, or you look at the phenomenological angle, and this is much more difficult in fact. What is the real effect in perception and spectral music in general deals a lot with phenomena of perception, which are much harder to put into categories.

JF: The Ligeti example I think is good. If you wanted to analyze one of the micro canons and look at each interval, you probably wouldn't be getting very far in terms of understanding the way that ultimately they sound when everyone comes in, in a piece like *Atmosphères*. I think the other thing that I would want to say about that is, part of it is just a phenomenon of—especially when this first started happening—this music just sounded so different from what everyone was writing. There's this phenomenon of difference, where what they see is that it's **not** like this [interval-based]. So anything that had quarter-tones and things that were extremely fused, suddenly that's all alike, even though fifteen of them are writing pieces that are absolutely identical, but because it's post-serial music and that's what music is, no one notices that those pieces happen to resemble each other. You know there's this phenomenon of difference. But I also want to ask Iancu and Ana-Maria the same question. How do you feel—people talk about the Romanian spectral school? Do you feel like it's a school?

AMA: Oh, well yes and no; I thought about it, but I think less from day to day.

Audience: [Laughter.]

AMA: Really! Just because of two realities. Most people who came to have a, let's say, spectral sympathy in their music, they are now writers of neo-romantic music, and so on; so they don't interest me anymore, as I consider neo-Romantic music complete bullshit.

Audience: [Laughter.]

{**AMA:**¹⁴}

¹⁴ {At the beginning of the 1970s, there were a few tentative approaches from representatives of the young generation of composers concerning spectrum. They

Audience #2 (Alper Maral): I have a question. It seems for me to be a gap, in a sense, approaching to [the] whole area of spectrum mainly by—or let's say timbre—mainly by means of pitches. I remember the very early book by Fritz Winckel, *Music, Sound, and Sensation*, in English, from [the] late 1960s. In the first chapter, he wrote that a human being can discriminate between, or can handle (in a worst word), about 50 parameters of sound. But we continuously are dealing with two or three parameters. Isn't it a gap for a better vision of spectralism, is my question.

JF: I don't know who wants to tackle this. From my point of view, I think it gets to the kind of problem that Cornelia brought up. When you start talking about 50 parameters, how do you want to cut the thing up, you know. Because any of these things that we name are actually made of all kinds of parameters, if you want to cut it up a different way. And I think that a lot of what spectral music, whether in Romania or France or anywhere, has tried to do is say that in fact to understand and manipulate sound, you have to understand that anyway you cut it up is to some extent arbitrary. Not just spectral music—this is what Stockhausen was saying, you know, at the time of *Gruppen* and these things, that to say that rhythm is one thing and pitch is another thing, well, they **can** be one thing and another thing, but they're all on continua and any way you cut it up is arbitrary. One of the things you see when you start working with people who do signal processing and other things, any representation you choose distorts the object being represented. So that if you want to get a good view of something, you probably want to use multiple representations which are complimentary and show different things. So you can't manipulate timbre without manipulating pitch, for example. Even if the end result as heard is entirely noise, you're going to be changing the spectral analysis, so in a certain sense if you want to look at that in an additive, in a break-down of component frequencies, you are changing pitches, and there's no way to avoid that.

AM: This is for sure but by your former speech, brilliant speech ...

Audience: [Laughter.]

AM: Yeah, in my opinion. You argued spectralism as an ex-alternative for serialism, but if we approach once again with the same parameters, with [the] same very old, well-known parameters—I mean pitch, once again I underline it, or very basic approaches towards time but not the 37, 47 other

were using natural resonance, acoustic scales, and so on, and a school seemed to take shape. But I think they weren't consistent enough in this approach, never arriving at a consequent, unitary, musical conception, and later they completely abandoned this way. Only a few continued to write music in connection to spectra.}

parameters to be mentioned maybe, well then we miss the main ...

JF: But see, I guess I'm not sure first of all that we do approach with the same parameters. What is true is that we use music notation which is quite closely related to the other music notation, but in that, it's something of a choice. Once you decide you're going to write for Western musicians who play Western instruments, unless you happen to have a group of them who are tremendously dedicated, you can't make them all start over from scratch and learn a completely different way to think of and play their instrument. To some extent one wouldn't necessarily want to, because we have this Western pedagogy which, at the end of these 25 years of killer work, they have a level of muscle and breath control, that's an unparalleled achievement in humanity.

I think in sort of a utopian world one could imagine completely other ways. I think one of the distinguishing characteristics of spectral composition in Romania or in France, [is] that everyone's very tied to really making music with musicians. These developments happened with ensembles like Hyperion, and like *l'Itinéraire*; it wasn't a sort of cerebral movement that was writing articles and writing scores that didn't get played for ten years. It was really very practical, there were experiments. Hugues Dufourt, who was mentioned, who I also agree is sort of, you know, on the borderlines of being spectral—one of his famous pieces, he actually had percussionists come to his house and do all kinds of different sounds. Then he actually empirically, experimentally would try mixing with various tape recorders to see how the sounds would mix, and what would be produced and then use the results of those experiments to produce the score. I don't want to—I'm talking too much; sorry.

Audience: [Laughter.]

Audience #3 (Matthew Goodheart): Yeah, I have a question. All four of you composers tend to work with traditional instruments even though often you're making very non-traditional sounds. When I think of a lot of the con—, other non-spectral school contemporary composers that focus on timbre, a lot of times they're using mechanical sounds; I know people have written pieces for refrigerators, radiators, things like that. I'm wondering if you've found any interest in reproducing non-traditionally beautiful sounds like, for example, *Partiels* is based on a trombone, there are things based on bells, these are all considered traditionally beautiful sounds. Have you considered doing spectral pieces based on the sound of a chainsaw or a car, or ...

AMA: It exists, that exists. It is a noise movement which has made noise music, and which is very important, with all genres of scratchings. But it's

still not spectral music because it's not a theoretical approach I think, or it's less. And it's not something made with a certain, I don't know ...

MG: I agree, that's why I'm saying that's more timbral-focused music rather than spectral-focused music. But there's a kind of crossroads. I'm just wondering if you've considered doing spectral analysis of sounds that are not traditionally considered beautiful?

AMA: Why not, why not? {In fact, using those sounds instead of other ones shouldn't be a problem of beauty—inner beauty, but of richness, of latent possibilities of transformation, of generation.}

TM: Well, I can speak for myself. I'm not only using traditional instruments, I'm also using electronic sampler, and when I reach the limits of instruments I just use electronic sounds, which I make with my computer. And as to the other aspect of the question, I have utilized sounds that are non-traditional instrumental sounds, which are not ugly sounds either, I think [laughs]. I find them beautiful, like for example the sea, or you know, this sort of sounds. The problem with the sounds that you mentioned, like the chainsaw, is that there is nothing much to be analyzed because they are very steady sounds, so they are not too interesting.

MG: I don't think so. I disagree with that.

TM: The sounds of nature are much more interesting, because they are chaotic in a sense, which means that they are moving, not a static model, and that makes them interesting. We did a piece with refrigerators.

AMA: Refrigerators have very poor sound. Anyway, that is a very poor sound; you can't transform it {too much}. It's almost a stream. But why not; theoretically everything is possible.

JF: You know, wealthy people spend lots of money to get refrigerators that don't make much sound, so they probably are on to something.

Audience: [Laughter.]

MG: Yes, but how many contemporary composers are wealthy?

Audience: [Laughter.]

Audience #4 (Judith Frangos): You all heard some of the Turkish traditional instruments the other day. While this movement has started in the West and primarily has used Western musical instruments up until now, it would be fascinating, certainly, to see these same techniques used with traditional instruments not only of Turkey but of other cultures. I think the possibilities for examining timbre when you use these instruments that are so unique in their timbral sounds, I think is a really exciting prospect.

TM: Well I have two Brazilian students who did pieces for *berimbau* and electronics using spectral techniques and I also had lots of Japanese students really interested in that and [who] wrote pieces using Japanese instruments.

Joshua Fineberg: It's sometimes hard to find the performers who want to—. I was very interested in writing for *gagaku* orchestra, and I still am, actually. But I actually was in discussions at one point, and a lot of the musicians are very traditionally trained and it becomes—they're very reticent to put themselves in the position where they have to do things that are quite far outside of what they've been trained to do with their instruments. I'm sure that's not a universal thing; it's a question of finding the right group. Also, of course, one has to worry about limiting numbers of performances and all those mundane, practical things.

CF: Just as an experiment, not at all as a composer, which I'm not, but one of the issues for ethnomusicologists often is, when traditional sounds are taken from the people out of context and changed and how do we feel about that ethically, and on and on and on. So one of the things I did was take an editing program with me to Africa, where I let the people record their own sounds and play with them. There's also the assumption that they use the sounds they use because their instruments can't do anything else, so I thought I would see what they did if they could do other things with their sounds. So this is a very simple, cheap program and I left them. They were up all night; they were crazy. These old guys who hadn't done anything more than wear earphones were up all night long playing with things, and turning knobs, and listening to sounds; and then what they had in the morning was phenomenal, it really was. They were absolutely intrigued by it, so the question of what happens—. When they can do it, they do it.

JF: Maybe one last question?

Audience #5 (Michael Ellison): Sorry, I've been waiting the whole time for this. It's a very basic question, and it has to do with esthetics, I think. Iancu, you said your goal was to **not** be artificial, and I'm wondering in a very general sense, I know it's a problematic question, but how much does this idea of artificiality versus naturalness affect your approach to music, and I'd like to ask that to each of the composers if possible?

ID: The difference is perhaps that I have an idealistic conception, a philosophic conception. I am not a realist composer. But maybe, because I lived my first period in a Communist country and I wished to develop another non-official point of view, to discover the freedom. For this, I am not—if you wish—I am not very actual. But it can be a chance also for other—, for the alternative point of view in this world. I represent, if you wish, an alternative point of view.

Audience: [Laughter.]

ID: For me, for example, the music can be artificial if you calculate all the parameters, all the form, all the music. That is artificial ...

AMA: Artificial intelligence.

ID: Intelligence, yes. It's not my name. Its name: technologic name. And natural, what is natural? Natural is to sing something to, like very poor people, like a peasant. I do not know what is the difference between an African player, composer, and me. It's perhaps the same position. In my simplicity I am the same, I wish to be a peasant. I wish to be. Evidently with other construction. It's an inspiration for me, to be free, yes. I construct that the work of very real and very scientific composers, it's limited and for me it's a border, yes? It's a border of the thinking, it's a limit of the thinking. But for me, I try to break all the space, I try to imagine something else, I try to offer my new experience, new possibilities. I wish to be open, each time to be open, each time to do, to imagine a small or great possibility for me, to develop something, to amplify, to modify.

AMA: To change.

ID: My point, if you wish, it's a humanistic point.

JF: Ana-Maria, for you?

AMA: Yes, for me I want to speak first of all about the difference between exactitude, exactness, and truthfulness. I think that it is artificiality to be exact and not truthful. This goes with the fact that what I look for in music, first of all, is an experience to be lived. It's not only calculation. Finally, you have to transcend the score, to transcend the instruments. You have to leave these, otherwise it's not music; that would be artificial. But this training is very difficult; sometimes you can train yourself—and here is also an experience of interpreter I can speak about, and of course also the one of the composer. You can train, you can try, you can do all the efforts of intelligence, of technique, and of all skills, but finally, music could stay somewhere very far away. This is the final problem of the music. And the music is finally something you cannot put your finger on, you cannot say what music is. Music is something that is made with the sounds, but finally it is not the sound itself. It's something that comes from somewhere, has a direction, a life; it's a state of mind, and after all, it's transcendence. {To never attempt this means, in my opinion, to be artificial.}

JF: Tristan?

TM: Well I suppose it's not really a question of definitions. I'm not quite sure what artifice means. However, I share your point of view that music is mostly an experience to live. I suppose etymologically artifice, artifact, to make art. So we can say that the sense of art is artifice, as opposed to the contemplation of nature. But at the same time, nature has been often used as a model for art, and we still are doing this, I mean we are doing this so-called spectral music. So I think there is a kind of dialectic between nature

and artifice, which is the way I am looking at musical phenomena. I like my music to seem natural, too. So what does that mean? It means that people can have a direct intuitive comprehension of the music. [Also] some areas that are not natural areas, but culture and other things, psychology and so on. So this is the sort of qualities I'm looking for in my music. And for that, I do seek models in nature, but at the same time, what I'm doing is pure artifice.

AMA: Sure.

JF: I think the problem is the notion we have between the word artifice and the word artificial, because artificial is generally a word that's used negatively. Maybe artificial is when the artifice isn't good enough. Because essentially when you think of a lot of craft, when it's really achieved one can't quite imagine how it was made; you can't necessarily see the seams any more. You know, in my presentation I talked about Japanese gardens. Some of the most beautiful Japanese gardens are designed to look sort of—as if it just happened that way. You know, there will be a pool of moss here and there, as if it was haphazard. Of course, they spent years and years getting it to grow that way, and planned it that way. Is it artificial? Yes, it's artificial in the sense that it was made. Tristan's right, and Ana-Maria. Ultimately, we don't want it to be artificial in the sense that it feels forced. If it's really made properly, it should feel like it has to be that way. From that point of view, once it feels that way to someone who listens to it, in a sense it doesn't really matter how it was made. Unfortunately, I think we're actually out of time.

WHAT'S IN A NAME?

Joshua Fineberg

It is very strange for me to be here at an international conference on spectral music. I'm used to spectral music being a small, not really defined group of about a half-dozen people who all know each other. That was still pretty much the way it was just a dozen or so years ago, and things have really changed since then. I suppose, in a way, this conference marks a watershed in the way people view this music. Even when I started doing this (which was already a good 15 years after Tristan Murail and Gérard Grisey had begun), the "mainstream" institutions of contemporary music viewed us so-called "spectral composers" mostly as a bunch of freaks writing a very "strange" sort of music. Why wouldn't we just write post-serial music like everyone else? That's what everyone who was a contemporary composer really ought to be writing. It seems that things have come a long way.

What I wanted to do in this keynote was talk a little bit about the history of this music. I'll start by discussing the term itself. Spectral music is an awkward term, as are most labels. When I was asked to do a *Contemporary Music Review* (Fineberg 2000a, 2000b) on spectral music, I really tried hard to think about how we could avoid using the name, because, of course, composers—including myself—hate labels. Tristan Murail and I both still lived in Paris at the time and I remember we had a long lunch and tried to come up with some other way to identify the commonalities that we share. We finally decided that, as bad as the name was, it wasn't misleading to the point that you couldn't live with it. Moreover, the old joke seemed relevant—that the only thing worse than being stuck with a label is not being stuck with a label. If people were using the label, at least they were thinking about the music in some way.

The problem, of course, is that—whenever you're dealing with a label—what matters isn't really the label; it is some much more complex thing that is referred to. In the present case, where the label refers to a musical movement/idea, you really need to hear the music; moreover, you need to know some of the ideas behind the music—some of the history—and have

some familiarity with the whole milieu. What's really nice about a conference like this is that while it may start with the label (a spectral music conference) it in fact goes far beyond that point of departure. What's more, this is not just a conference on spectral music—as was mentioned in the welcoming address—this is a conference broadly focused on all sorts of music concerned with timbre (and within that broader context, spectral music is being prominently featured).

I think it is worthwhile to make a distinction between spectral music and other music that deals with timbre in different ways. I shouldn't use the word timbre so much, because it immediately pulls in a very specific set of associations. When I say timbre, what I really mean is sound. The start of spectral music is really sound, and this isn't a preoccupation that's new to spectral composers. There's a quote by Arnold Schoenberg from *Harmonielehre*, which was written in 1911 and revised in 1922, which I like to use to show how long composers have really tried to think about sound.

We ought not to forget that we still must account for the tones actually sounding, again and again, and shall have no rest from them nor from ourselves—especially from ourselves, for we are the searchers, the restless, who will not tire before we have found out—we shall have no rest, as long as we have not solved the problems that are contained in tones. (Schoenberg 1978: 314)

It seems very clear when you go back and look at what Schoenberg and Webern were doing from the years of about 1905 through 1922 that they were obsessed with the notion of sound. In fact, if you look at some of the sketches one could even argue that they were trying to make something like a proto-spectral music. However, they lacked the tools and ultimately failed. I think the most striking example I've seen was in a talk given by Reinhold Brinkmann who did a lot of sketch work on the Webern Bagatelles for string quartet. In the early sketches, it was entirely a timbral piece. There was almost nothing that projected pitch. All the notes were *col legno tratto*; the entire construction was really based around a timbral progression. It seems probable, though apparently the records are not entirely convincing, that there were some reading sessions that were held using this early version. Webern was clearly dissatisfied with the results, because immediately after these reading sessions, he began revising the piece and it became gradually more and more the piece we now know—which is very much about pitch manipulation. When you look at Schoenberg, you have *Farben* and other truly experimental works. Gradually, however, his work became less about searching and more about elaborating a system. The reason for this evolution in Schoenberg and Webern—when viewed through the lens of my

very highly biased and self-serving reading of the historical record—seems to be that they tried to manipulate timbre and found that they didn't have the tools with which to do it completely enough to satisfy their compositional intentions. Then, rather than accept a music they could not control, they decided they had to go back to a part of music that they did have the tools to manipulate, and that was pitch.

Let's start off by discussing the history of spectral composition. This is somewhat complicated by the fact that we have here different groups of composers who are often referred to as spectral. For the purpose of this lecture, at least, when I talk about spectral music I'm principally referring to the music that has grown out of the work of Grisey and Murail in the early 1970s. Though both of those composers were French, I believe the real particularity and innovation of their approach was not linked to its "Frenchness," but to their use of timbral manipulations based on more than empirical *trouvailles* [serendipities] as the cornerstone of their music. What do I mean by that? Both of these composers were deeply post-electronic in their approach. If frequency analyses had not been available to them, and if some knowledge of acoustics, psycho-acoustics, and the mathematical models they use to describe sounds were not also available, neither of them could have written anything like their early influential pieces (*Partiels*; *Ethers*; *Jour, contre-jour*, etc.). Spectral music is not really music based on pure tone-color (*Farben*), nor is it based solely on sensitivity to timbre and a desire to pay attention to it. While those elements are all present, what really distinguishes spectral work is something additional: knowledge of the inside of sound and the desire to create forms by using this knowledge to work with sound from the inside.

I think it's very clear just from the fact of this conference that spectral music has become a major tendency, and has broadened in scope from its point of departure. I tend to think of there being three generations of spectral composers, not chronological generations (it's only been 30 years after all), but three compositional generations. This division, however, doesn't really capture the aesthetic range. Some spectral composers have moved towards minimalism and some have become downright expressionist, with all the lyrical connotations that implies, and a whole host of other, even novel aesthetics have emerged from this supposedly unified group. In fact, I cannot really think of two spectral composers who are really similar in terms of the overall aesthetics. (I don't want to belabor this, because it is discussed in the two *Contemporary Music Review* issues I worked on, and elsewhere, so some of this is going to be repetitive; I know, however, that not everyone here has read them.) Basically, I believe spectral music comes down to an

attitude. This idea was originally put forth by either Gérard Grisey or Tristan Murail (they never agreed on this: Grisey said that Tristan first said it, and Tristan says that Grisey said it—there’s no way of definitively settling these things, especially with Gérard now gone). By describing spectral music as an attitude, rather than a style or an aesthetic (whoever first said it), meant something very specific. What was meant is best summed up in the famous Grisey quote: “We are musicians and our model is sound not literature, sound not mathematics, sound not theatre, visual arts, quantum theory, geology, astrology, or acupuncture” (Grisey 1984: 22, my translation).

This is a funny quote coming from Grisey. Here is a composer who wrote a piece called *Le Noir de l'étoile*, which is built around the sound of a pulsar; and a piece called, *L'Idole paradoxale*, that’s based on a De La Francesca painting. The whole *Les Espaces acoustiques* cycle has a very large theatrical component; and had he lived longer, he might well have made it around to geology and acupuncture as well. So what did he mean (or was he just a hypocrite)?

While one might simply decide that he changed his mind in the years after he wrote that quotation—since most of those pieces are from somewhat later—I don’t think that is the case. I believe that right up until the end of his life this conviction had not changed. I do not think he ever believed that composers should not be nourished by extra-musical ideas from unrelated fields. Rather, he thought that in the end, whatever ideas helped get you there, what matters, what music ultimately is about, is the transformation of sound. Whatever extra-musical ideas might have led you to create your sonic objects, they in no way validate it. I think this is the core of the spectral attitude. You can write as many articles for *Die Reihe* (or perhaps a new version called *Le Spectra*) as you want and not one of them will make the piece better than it sounds. These articles may be extremely valuable in explicating how you made the piece, or what you think of as being important about the piece, or for a whole host of other issues of great interest to composers or musicologists, but they have no direct effect on the actual work. Ultimately the piece is—if you will—a sonic sculpture: it is sound evolving in time. It needs to function in that domain. A piece of music is not a work of symbolic philosophy that, incidentally, can be performed sonically. Nor is it a mathematical proof of a concept that can be heard. It’s a piece of sound, which could be studied in other ways, but ultimately derives its justification from what it does sonically in the ears and mind of a listener. This is why you don’t get the same degree of obsession with notational principles that you have in some other contemporary movements.

I think all of us have basically adopted the attitude that the notation doesn't really matter much. We have to find ways to do it that will be as efficient as possible, but there's no investment in it.

Grisey scores, for example, are notoriously poorly notated in certain ways; there are real performance problems with some of the scores. Nevertheless, this is not because he dogmatically wanted it to be notated in an obscure way that corresponded to his underlying conceptions; if you saw him in rehearsal, he was perfectly happy to change anything from the original notation into something that would be clearer. The underlying problem was trying to find a way to clearly communicate something that could only be awkwardly represented with traditional notation. Thus, he kept traditional notation when he thought that would be clearer or easier, and freely mixed it with other types of notation when he thought that they would be clearer or easier. Like all of us, he sometimes guessed incorrectly and produced ambiguities that can cost a lot of time in early rehearsals. It was not a question, however, of the music requiring that notation. One might then wonder whether we ought to go back and improve some of the notation. The worry is that by doing so, we might distort the composer's intention. Since his intention was never, however, anything other than being clear (it was simply that he did not necessarily always know exactly what would be the clearest way of notating something—and the clearest way for one performer or ensemble might be more difficult for a different person or group), in many cases corrections could certainly be made. I think this is true across the board for composers whom one could really say are spectral.

There is something that may be worthwhile to point out a bit here, because it is something we don't talk about a lot any more and it helps explain what can sometimes seem like the clubbiness of spectral music. I think it's helpful to remember that spectral music was started almost entirely by people who were scarred by post-serialism and who were reacting very violently against something very specific. This is especially clear if you go back and look at some of the early articles that spectral composers wrote. Of course, when you put up a dogmatic form of serial music as a straw man today, it looks somewhat ridiculous because it seems like such a weak straw man. Nearly everyone knocks serial music now; there's no novelty there. It's very hard to find a true believer who feels that well-applied set theory will, in principle, actually make a piece sound better. I suppose there are still a few, but even Babbitt probably would go along with that sort of statement these days. In the days when spectral music was first being created, though, denying the artistic power of serial permutations was a radical proposition. You **had** to write serial music. Even Olivier Messiaen,

who didn't really write post-serial music at that time, basically said to his students in the late 1960s that—if they wanted to be relevant—that is what they should be writing. He wasn't going to insist, but he really believed that someone who was at the cutting edge would be writing music that way. That's what new music composers did.

This seems hard to accept now. One might cite all of the precursors to the spectral composers we think of now, writing a sort of proto-spectral music. One must remember, however, that these composers who come so readily to mind now were not nearly so well-known, or were thought of very differently, at the time. Giacinto Scelsi had practically not had a public performance at that point in time. György Ligeti was, of course, already well known, but we view Ligeti now through the lens of all the timbral music that came afterwards. In the late 1960s and early 1970s, Ligeti and even Iannis Xenakis were mostly seen through the lens of serial music. Xenakis is perhaps the more striking example; his music was viewed not so much as something truly different, but rather as different means to achieve something quite similar in result and effect to serial music. The music we now think of as timbral, or at least textural, was not viewed as a slap in the face to serialism at the time, in the way that it is often presented in survey courses now. Ligeti was working at Karlheinz Stockhausen's studio, there was no conflict there, whereas in France, between the "Boulez" camp and the "spectral" camp there was immediately very strong conflict. In fact, one of the main reasons that l'Itinéraire—the ensemble that was the organ of the spectral composers in the early years—received a state subsidy after only one season, was because a group of composers who didn't like Pierre Boulez—but who didn't particularly care for spectral music either—got immediately behind the funding of l'Itinéraire to use it as an intellectual and aesthetic counterweight to Boulez and his Domaine Musical concerts.

In the early years, then, there really was something like a polar opposition. Until very late in time, even after Boulez had to bring some of the spectral composers to IRCAM in the early 1980s, there was a real tension. Even in 1992 when I took the yearlong course at IRCAM, I remember every post-serial composer who came through had to preface his or her presentation with a gratuitous denigration of spectral music. So it's very amusing for me now when you travel and someone says something about spectral music and a listener will say, "ah, Boulez!" Somehow, because spectral music is thought of as very "French" and because Boulez is thought of as the French national composer, many people have grouped it all together. (Of course, from a political point of view, in France all of what they call *musique savant*—contemporary music that's difficult and not

deeply accessible—is equally menaced. This has led many of us, who may have felt like enemies, or at least adversaries, in the past to see ourselves as being firmly on the same side of an ever-growing cultural divide.)

Although spectral music has always painted itself as a revolutionary music—due to the difficult situation experienced in the early years, when it was really a radical gesture to write those pieces—one can clearly see some forebears of spectral music in the 1950s and 1960s. The role Scelsi played is perhaps the most direct. Both Grisey and Murail were in Rome at the Villa Medici. They knew Scelsi and spent time with him at his house; they saw scores and heard music. Moreover, the role of Ligeti was fundamental; all of the founders of l'Itinéraire were deeply familiar with the Ligeti scores from the 1960s. The role of Messiaen was also essential. His influence was not so much found directly in the music itself, but in the idea that composers could still be preoccupied with harmony and that that is allowed. Also to some extent, the almost missionary zeal Messiaen brought to the act and ethics of composition has been a characteristic of spectral composers from the beginning—I suppose this came from his religiosity. Spectral composers have never been tepid in their beliefs and opinions. It has been a striking shared characteristic that all of us are the sort of composers who really believed that the rest of the world could be entirely wrong, and that we had seen the future of what music had to be. It can seem absurd to hold such views, especially when stated baldly, but that sort of deep conviction, I believe, is a powerful tool for a composer—even if it is illusory or ill founded, because probably ultimately one has to admit that it's illusory.

Another composer who was very important to Grisey (though much less so to Murail) was Stockhausen. Stockhausen, you know, is a strange sort of wolf who compositionally has covered so much territory. One could really make a case that *Stimmung* is a spectral piece; it's a pretty static one, but it's a spectral piece nonetheless. There's no question that, at least for Grisey, this model was important. He knew Stockhausen's work very well. He had actually gone to Germany for a while and worked with an acoustician there and knew Stockhausen in the early 1970s, prior to writing *Périodes*, *Partiels*, etc. He was influential in many of the ideas that led to the cycle *Les Espaces acoustique* (Grisey's magnum opus), which was written between 1974 and 1985—almost immediately after he came back from Germany. The scope of *Les Espaces* (it's an evening-length work that takes about an hour and fifty minutes, with one composed intermission) is a very Stockhausen-like gesture. It's very big, it's very continuous, and it was done as a cycle of pieces that originally were released separately, but that were intended to be a

continuous cycle. One can think of many examples where Stockhausen did the same thing.

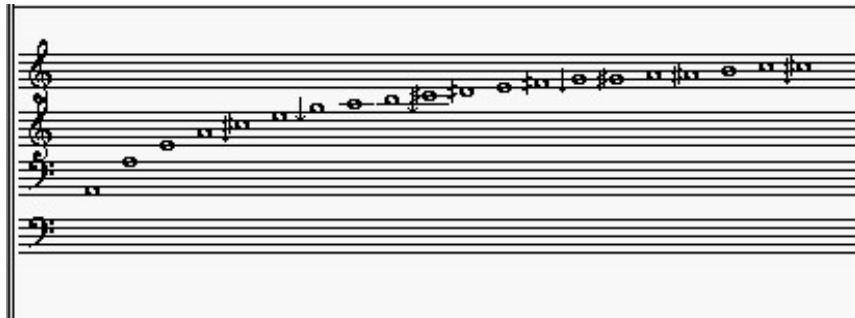
While the basic concepts and ideas may not have been generated out of thin air, this in no way diminishes the startling originality of those first spectral pieces. What Grisey and Murail did with the notions was fundamentally different from Ligeti, Scelsi, or Stockhausen. Perhaps a good starting point for talking concretely about the specificity of spectral music is to compare it with early Ligeti. A piece of Ligeti's, like *Atmosphères* or *Lontano*, is really made out of timbre. I do not think that anyone would seriously suggest that the micro-cansons and other generative devices in that music are interesting polyphonically. In fact, they are not really canons at all in the traditional sense of the word; Ligeti simply uses them as a means of creating dense, rich textures. Of course, from the point of view of a young Grisey and Murail, and for me also when I was getting to know that music, it is no loss that these cannot be heard as canons, but instead generate texture: this is the force of that music. The problem was that the textures created in this way achieve some singular thing, a state, a texture, a sound. This approach was a natural outgrowth of Ligeti's experience in the electronic music studio. (Again, there's this post-electronic thread that runs through with spectral music.) What really interested the spectral composers, however, was not a static state, but the ability to transform a state.

Grisey actually for a long time wanted to call spectral music "liminal" music—which, much to his credit I think, shows he had no ear for marketing. By liminal, he meant transitional, he saw his music as being made entirely of transitions or transformations, exploring the limits or borders between states and perceptions. Grisey's central preoccupation was the ability to move from one state to another. Even without adopting completely this view, its effects are clear throughout the spectral approach. The main reason one needs acoustic knowledge is not to produce sounds. We've all heard the really wonderful electronic sounds that can sometimes be produced in electronic studios through purely experimental work. You play around with all kinds of parameters, plug things in, twist them around, and after producing 3,000 more or less satisfying sounds the 3,001st is amazing. There often is no real conceptual framework for understanding why the 3,000th sound was no good and the 3,001st was great. This kind of work is not based on making compositional "predictions" and then realizing those structures. For many kinds of composition, this lack of predictability is not a problem. In fact, one of the great advantages to the *hors-temps* phase of composing is that you can collect these discoveries and then put only the best together. If you want, however, to be able to take that state

(sound) and manipulate it, gradually transforming it into something else, you need to start to understand much more about how and why it works.

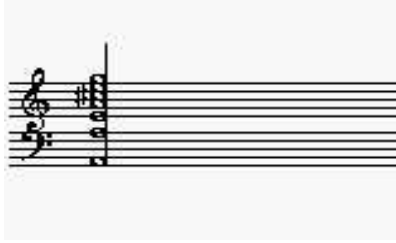
This is where acoustics and psychoacoustics came into the picture. It is important to understand that they were not adopted because it seemed like a good idea. It seemed like the only way forward, the only way to understand sounds enough to be able to manipulate them in a compositionally controlled manner. Of course, to do this, it was not enough just to understand the sounds as vibrations in the air; one also had to understand the ways that these sounds would be processed and perceived by listeners. It is no coincidence that psychoacoustics really started to take off as a science in the 1960s and early 1970s, and spectral music really began in the early 1970s. Without some basic psychoacoustic knowledge, this movement would never have gotten off the ground. We would have been in the same position as Schoenberg and Webern: feeling the need to understand sounds, but lacking the tools.

That's already too much background; I want to get to a concrete example. I'd like to start with one of the ubiquitous aspects of pitched musical sounds, the thing that many people think of as the basic unit of sound, a harmonic series. We tend to think of the harmonic series as the following object:



Example 1. Arpeggio of a Harmonic Series.

In the way we most commonly encounter this object, however, it is not something separate or distinct. Rather it is bound up inside the intimate structure of most of the sounds we regularly hear—pitched sounds, vowels, voiced consonants, major triads, etc. Many common musical structures, like a dominant-seventh chord, can be arranged as if they were part of a harmonic series:



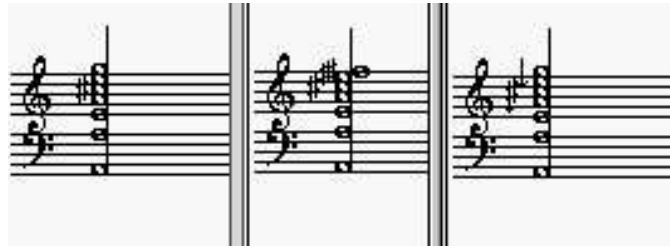
Example 2. Dominant-seventh Chord Voiced as Part of a Harmonic Series.

This spacing yields a very familiar musical object, and a very consonant object. While in a tonal theory class a seventh chord will be labeled as a dissonant object requiring resolution, we know that at least from Claude Debussy on this has become a relatively a consonant sound. The power of conceiving this sound in terms of its underlying structure, rather than its grammatical function, is that instead of thinking of it as a collection of notes, you can think of it as a collection of frequencies with a mathematical relationship that is more precise and closer to the way we hear than the intervallic relations we normally use to construct chords. Thus viewing the chord as the integer multiples of a fundamental offers a different representation of exactly the same object. This new representation (like all representations) gives us the power to do some things with the object that were not possible before. All representations are meant to highlight certain properties, often at the expense of others. The familiar pitch notation of a dominant-seventh chord is excellent for operations like transposition or especially inversion. This advantage, however, is also a distortion, because it implies that the object (chord) is somehow the same when you invert it. Moreover, it implies that the object is essentially the same in a high register and a low register, and that the object is the same when it's spaced in accordance with the harmonic series and when it's spaced in a closer position.

This representation does not deny (and certainly all the actual music written using traditional systems is aware) that something very important changes when you put a chord in close position, change its register, invert it, etc.; however, this notation suggests that these transformations are of secondary importance, relative to the aspects that survive these manipulations. Therefore, if one is writing music where this hierarchy of importance is not preserved, pitch representation may not necessarily be the

framework that corresponds most closely to the way the music will be perceived. Now, pitch notation clearly corresponded very well to the way composers used to write, which is normal because the notational system was developed by and for that music. For composers today, however, if we think of that chord in its overtone spacing differently, as a collection of frequencies, suddenly some new possibilities open up in a very straightforward manner (just as traditional notation opened up simple inversion and transposition). The first thing that becomes possible is to separate the structure from the equal-tempered scale. Instead of approximating this chord to the nearest equal-tempered semitone, we can use a finer approximation, like quarter-tone, or eighth-tone approximation.

In the following example, you'll hear a chord played twice in semitone approximation, twice in quarter-tone, twice in eighth-tone, and then back again to semitones:



Example 3. Semitone, Quarter-tone, Eighth-tone Approximations of the Same Chord.

For me, when you go back to semitone after hearing the closer approximations, the sound has become downright dissonant. The perception of that same sound has really changed and this brings up another basic perceptual issue that became key to spectral music. It turns out that when structures that correspond in some way to an underlying perceptual or physical reality for the ear are reasonably well-approximated, a sort of continuum between what we used to think of as harmony (separate notes of a chord) and what we think of as timbre (fused partials of a unitary sonic image) is created. That continuity, that liminal space between harmony and timbre, is really where spectral music began.

This opens up a whole range of choices beyond the polar opposite clusters or open octaves of Ligeti's music. This new approach created a

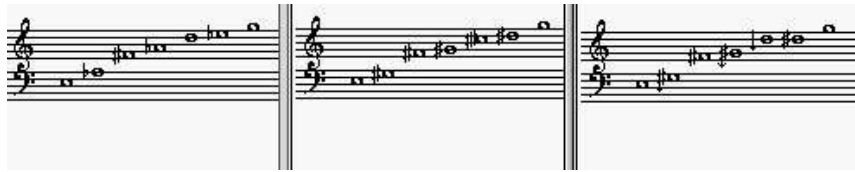
whole realm that lies between those two extremes. Moreover, it allows us to negotiate this realm in a way that corresponds to the way a listener (without specialized knowledge and experience) will hear the progression.

If you've ever taught music to college students, you will know how difficult it can be to get college-age kids who've never had ear training to hear an interval. It's extraordinarily hard for them. In one experiment, a group of psychologists tried training non-musicians to reliably distinguish between a major third and a minor third. The subjects only had to remember these two intervals as interval A and interval B; they did not have to learn technical terms or theoretical systems. The results were awful: after a half hour of exposure, the subjects did barely better than chance. When the same sort of experiment was run on timbre, however, using a pitch played on a flute and an oboe (the same pitch, the same dynamic, the same duration), anyone off the street had virtually no trouble telling you which was which with almost no training. Of course, this is because we need timbral perception; it's how we understand vowels and speech; it's how you recognize that it's your mother on the phone; it's the way most people listen to rock music. When people listen to pop or rock music, it's amazing: they hear the first drum hit of a pop song and they know which song it is. They didn't hear any of the tune, they didn't hear the singer's voice—they heard a bass drum! All those songs start with a bass drum anyhow, but they knew just which bass drum, hit in just which way, recorded just so. We're enormously sensitive to timbre, and we have enormously powerful mental tools to hear and process it.

Therefore, what spectral composers have tried to do is to build a music that would plug into those tools. We didn't believe, like the early serialists did, in a utopian vision whereby human perception was somehow going to evolve based on the repertoire we created for it, or where musical training would become so widespread that all sorts of people would learn to hear intervals accurately. That is probably possible in some glass-bead game world where they trained everyone from earliest youth to hear intervals fully and accurately, if a serially oriented, or any traditional sort of, musical education were given the same amount of time as writing or even math (Schoenberg is said to have believed that the 12-tone technique would come to be taught in high school). The fact is, however, that in the real world that seems extraordinarily unlikely. We have a fragmented musical culture and the most viable option seems to be accepting the way people actually hear and then learning to write music suited to that reality.

Let's get back to some examples. I started with the harmonic spectrum; this is not, however really a very interesting object as such. Therefore, very

little of the actual music written by spectral composers uses the pure harmonic series as anything other than a hyper-recognizable landmark (this is a little bit less true if you get into Romanian spectral music). In all of Murail's work, you'll never hear more than two or three real harmonic spectra in a whole piece. In Grisey's work, you did find quite a few pure spectra in the early days, but they almost never occur in the later works. In my music, I doubt that I have even once used a pure, undistorted, untreated harmonic spectrum, because it's a very connotative sound. In fact, it gets away from the sort of liminal states that the music is really about. There are other sounds, however, even sometimes drawn **from** a pure spectrum, that give you the same kind of richness and potential for manipulation, without the strong connotations. Let's look at an example; the following sound contains just some of the upper partials (two out of five) of a harmonic spectrum, pretty far up, the fifth through the 19th partials:



Example 4. Two Out of Five Partial Beginning with the Fifth Partial and Continuing through the 19th Partial of a Harmonic Series—in Semitone, Quarter-tone, Eighth-tone Approximations.

Again, you'll hear the various approximations—semitone, quarter-tone, eighth-tone, and then back to semitone. What this example should help show is that with sounds that are more tense,¹⁵ the closeness of the

¹⁵ When you take a traditional harmony class, tension is almost always taught in a grammatical way: this chord requires that resolution, that one is incomplete without this, like linked clauses in a sentence. Tension can, however, be generated in all sorts of ways in all different art forms (contextual tension, physical tension, emotional tension, etc.), but here I want to confine myself to harmonic tension in music. In the mid-1990s, I was collaborating with an American ex-pat psychologist then based in France, Steve McAdams, on some studies looking at harmonic tension in unfamiliar music. He and his students ran some pilot studies to try to determine how they should explain tension to the experimental subjects who were going to rate the relative tension of chord pairs. What he found was that if he tried to call listeners' attention to any of the specific features that might contribute to tension, they came to very different conclusions about the relative tension of chords. When

approximation becomes even more central to qualities of the sound that will be perceived. This is because the level of tension generating dissonance we hear is largely based on the amount of roughness (a measure of the amount of beating between partials that fall within the critical band), which greatly increases as the approximations in the less precise approximations of dense harmonic objects. This effect is familiar from “cluster”-based music like Ligeti’s or Penderecki’s—though in this music the richness of the timbres used is often the cause of the extra roughness. Take, for example, high clusters in violin harmonics that are not terribly tense, because these sounds have few partials to beat with each other. High clusters in the piccolos and clarinets, however, will send you screaming from the room because there’s all this extra energy up in the third, fifth, and seventh partials of each of the fundamentals being played.

If we leave the domain of harmonic spectra and fragments of those spectra, there are many other types of objects that maintain coherent sets of acoustic relationships, which are easily perceived. One of Tristan Murail’s landmark pieces, *Gondwana*, created bell sounds using a simplified model based on frequency modulation (FM) synthesis, which John Chowning had developed just a few years earlier, and which is familiar from its use in Yamaha’s DX and TX synthesizers. I bring up this example because it helps demonstrate the interconnectedness between scientific and technological work of the time and artistic production. Murail was not interested in frequency modulation per se, but all of the various developments in synthesis, acoustics, psychoacoustics, etc. were feeding off each other. John Chowning’s article defining FM syntheses had come out when Tristan Murail was working on some of his first “spectral” works. (The article came out in 1974 in *Computer Music Journal*.) *Gondwana* is from about five years later, but earlier pieces of his had already used these kinds of harmonies.

[Example 5] is of one of these FM synthesis-based chords. I want to point out that I am not using FM synthesis to make this sound, rather I am re-synthesizing (additively) a sound whose harmonic/timbral structure corresponds to the same set of relations as those created by FM synthesis. Once again, I will play the various approximations—semitone, quarter-tone, eighth-tone, then back to semitone.

he just said “tension,” however, and told them to define it in their own way, they agreed almost perfectly on how relatively tense the chords were.



Example 5. Chord Based on the Model of FM Synthesis in Semitone, Quarter-tone, and Eighth-tone Approximations.

Please notice how these chords fuse together into timbre, just like chords drawn from the harmonic series. While this technique creates a different sort of timbre, it is still a kind of timbre that the ear “knows” how to hear. Why? Because the ear is looking for regularities on the frequency domain, equally spaced partials, or at least predictably spaced (sometimes they can be spaced exponentially), and the FM model is just as linear in the frequency domain as the harmonic series. This frequency regularity seems to be one of the keys as to how the brain and ear decide whether a set of sounds should be combined into a timbre (fused together) or left separate. From a compositional point of view, what we most often want to create is a sort of middle ground between sounds that we fuse completely into a single sonic image and sounds that remain clearly distinct as harmonies.

Moreover, by adopting this frequency concept framework, we can do more than just generate specific new sounds with this harmony/timbre ambiguity; we also obtain new methods for navigating between these entities. If we take a chord based on frequency modulation as our starting point and move towards a chord drawn from the upper partials of a harmonic spectrum, we could move between them in the domain of notes, by drawing a line on music paper and then evenly dividing it into intervals. Moving one of the voices 15 semitones in 15 steps, then, would mean moving that voice one semitone per step. If, however, we look acoustically at the intermediate objects produced by this sort of interpolation, they are extraordinarily inhomogeneous. One step may put a perfect fifth between the outer voices, the next something much more dissonant, then right back to something more consonant without any clear sense of progression. There may also be strange contrapuntal effects produced by moving up in this linear scale. The ear is really not wired quite that way, and doesn’t necessarily pay attention to sounds in a manner congruent with that sort of intervallically linear interpolation. To generate effectively the sense of moving from one type of sonority towards another, you would more likely want to have a bottom interval that gets gradually compressed, you would also probably want the

amount of intervallic compression to evolve throughout the progression, rather than remain fixed. The next example is the interpolation I have just described, first performed within the note domain, and then (using the same two endpoints) within the frequency domain.



Example 6a.



Example 6b.

Interpolations between an FM Chord and a Chord Drawn from the Upper Partial of a Harmonic Series. Example 6a shows the results of this interpolation when calculated in the note domain, and 6b shows the results of this interpolation when calculated in the frequency domain.

While it is somewhat subjective, at least to me and to most of the people to whom I played this example in small classes, the frequency domain version is a much smoother and more directed interpolation.

The problem with the examples I've shown so far, of course, is that they are much too simple and obvious. This is because I was asked to use this speech to give some basic background demonstrations and music is certainly not about basic demonstrations. Now some people have tried to criticize the earliest spectral works by accusing them of being just that, demonstrations. I think a more accurate way, however, to view even those works from the early 1970s, which did have a certain didactic side, is to compare them to the abstract-expressionist paintings of the 1950s. Grisey and Murail had to prove that it was truly possible to make a very different kind of music that still functioned musically (sonically). At the time, it was far from evident that new works could be both significant and substantially different. This was a period dominated by the homogeneity of the "International Style."

With the early spectral pieces it suddenly became possible to go to a concert and instead of hearing trills and arabesques in tritones, minor thirds, and minor ninths you could hear the opening of *Partiels*—imagine hearing that in a concert in 1976, right after you’ve just heard Pierre Boulez’ *Dérives* or *Rituel*. It was an enormous shock. I think it’s very hard today to realize just how cataclysmic this was at the time. Music was so much more homogeneous in concerts at that time than it is now. This sort of music was unthinkable. It was as bad as the first time that people saw nudity on stage—it was truly shocking. The ensemble is playing the harmonic series of a trombone, they’re repeating it, it’s exactly the same, it’s just tightening up, and then it starts gradually transforming. There had been La Monte Young and the American minimalists but they were not doing this in concert halls very much at that time, their performances were mostly in very alternative spaces and the perception at the time was very much tied up with what was happening in poetry and visual arts. Whereas the spectralists were trained at the conservatoire, they were performing in mainstream concert halls with classical musicians. Though one can see a common link, the effect was very, very different.

Looking back now, it’s helpful to think of the 1970s as a sort of pedagogical or didactic period for spectral music. By saying this, I don’t mean in any way to limit that music, which is absolutely wonderful, but it was deliberately limited in terms of the richness of its formal gestures and aesthetic scope. Thus the music, inevitably, had to change after only a few years. Those early works concentrated almost exclusively on processes, on gradual transformations, because they wanted to point out that this was a way of organizing music and giving it back its teleological orientation. Once that had been done, it seemed evident that a broader formal palette could be integrated within that structure.

If we go back to the analogy with the abstract expressionists, we can see that it is not always easy to go beyond the context in which a real aesthetic discovery is made. Once Mark Rothko had shown that he could produce expressive paintings that were nothing but two or three bands of color, what was he to do next? Unfortunately, he never found a way out of the beautiful box he had built and had to kill himself. (I actually once saw a Rothko retrospective that as I recall was organized chronologically. There were all these wonderful paintings, which gradually moved towards his color-field technique. Once he found this technique, however, he never stopped using it, the colors just kept getting darker and darker until the final year when the colors are all black, dark brown, and dark rust. I think for Rothko it must have seemed like there was no way out from that point.)

What spectral music really did in its early days was show that the traditional, bipolar dichotomy between diatonic music and chromatic music was just an illusion. In fact, there was no reason to stay stuck to that line, forever oscillating between those same two extremes. It was possible to step outside of that axis entirely. A whole, rich domain allowing structure and transformation, beginning and end, and something akin to development (though evolution might be a better word), was there waiting to be explored. There was, in fact, development that wasn't motivic development. There was progression that wasn't tonal progression—though it might have certain functional similarities to tonal progression. There was this whole realm of possibilities. Those early pieces did not become a box fencing the music in, but served as an initial proof-of-concept, offering some limited but entirely convincing prototypes.

It was from that point on that the music really started to branch out in many different directions. For example, having shown that processes could create directionality, it became possible to omit many steps of the process without destroying the overall directionality. (This is not a new idea; Debussy did it all the time. In Debussy's development, an idea sometimes goes subterranean after its first few appearances. In fact, in some of his sketches, he even continued ideas while they were not being played so that when they returned it would be as if they had been continuing to develop while other material was being played.) Contrasts and formal ruptures took on more prominent roles (though they had never been as completely absent as is commonly thought). Even new sorts of melodic figuration and gestures grew out of the textures. While none of these ideas were new to musical forms, they were now being combined with the perceptual and harmonic tools that had been developed in those early spectral pieces. Composers could allow themselves the freedom to use elements that had seemed unrecoverable without resorting to anachronisms, because they had already developed a fundamentally different set of tools with which to build these structures.

I want to wrap up with the Schoenberg quote I started with, because the second half of that quote ultimately did not apply to Schoenberg himself, but I think it applies pretty well to what we're doing here. When Schoenberg wrote this, he was reacting against people like Heinrich Schenker, who were claiming that without tonality there could no longer be real music. Schoenberg wanted to disprove that notion by asserting that even tonal music had never properly dealt with the reality of sound, and that ultimately the truest musical expression would be found by truly delving into the structure of sound. He said:

I think, then, contrary to the point of view of those who take indolent pride in the attainments of others and hold our system to be the ultimate, the definitive musical system—contrary to that point of view, I think we stand only at the beginning. We must go ahead! (Schoenberg 1978: 314)

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SPECTRALISM: FROM HISTORICAL EMBEDMENT TO NEW PERSPECTIVES

Bert Van Herck

GÉRARD GRISEY ON SPECTRALISM

As a participant of the summer Academy at the Institut de Recherche et Coordination Acoustique/Musique (IRCAM) in 1998, I attended—among others—the lectures of Gérard Grisey. During one of these lectures, he showed himself annoyed about the term spectralism. First of all, he did not like this word; he preferred *écriture liminale*.¹⁶ Secondly, he was annoyed about the hype generated by the commotion around spectral music. In particular he criticized the presentation of spectralism as a completely new kind of music, as a true musical revolution. Grisey argued that parts of compositions from composers such as Béla Bartók, Ludwig van Beethoven, and even Claudio Monteverdi could act as forerunners of spectralism.

A first example is the beginning of *The Miraculous Mandarin* by Béla Bartók. Obsessive patterns in the strings with repetitive motives in woodwinds and brass culminate in a complex, nervous and chaotic texture. A second example occurs in the first movement of Beethoven's Sixth Symphony: in the exposition several instances are found of Beethoven generating a whole texture from a short motive based harmonically on one single chord. In most cases, these harmonic fields are characterized by an important dynamic evolution but the atmosphere is always calm and gentle. A last example is taken from Monteverdi: the brilliant ritornello at the beginning of the *Vespro della beata Vergine* is a splendid example of how a single chord can express such a joy and exaltation.

¹⁶ With the term *écriture liminale* Gérard Grisey wanted to express a certain ambiguity. The ambiguity he was explicitly looking for is when the sounding of a chord oscillates between the perception of a chord and the perception of a timbre. More information about *écriture liminale* is found in Grisey 1991: 368.

In each of these examples, the composer expresses his fascination for the quality of sound by using only one chord. Considered from such a viewpoint, spectralism is based on the development of a special kind of harmonic experience. For a better understanding of this “special kind of harmonic experience,” a short reflection on harmony might be useful.

HARMONY

Speaking about harmony in a traditional sense—the harmony of the tonal era—implies two aspects: firstly the type of chord and secondly the chord progressions. By type of chord is meant, for instance the triad, its inversions, seventh chords, and so on. Chord progressions are the handling of the possible connections between these chords. Therefore, the first category is a vertical one: the quality of sound; the second one is how structures are built with these chords.

Comparing this with a spectral point of view, it becomes obvious that chords are not used any more to generate structures by way of chord progressions, but chords are developed in a sophisticated way to create new timbres. The chords are different and the purpose, the intention of the chords is different as well. In other words, the notion of harmony is not the same any more; there has been a shift from chords used for progressions generating structures to chords used to create new timbres.

STATIC HARMONY AND BRINGING INTO PROMINENCE OF OTHER PARAMETERS

However obvious this seems, the implications are important. Since harmony in a spectral way aims to create new timbres, the musical meaning does not rely any more on chord progressions. In fact, a lot of the spectral music is characterised by long sustained chords. These long sustained chords have been criticized for producing the “static” character of spectral music. Indeed not the harmonic rhythm of the chord progressions is of first importance but other parameters such as density, articulation, dynamics, and rhythm are brought to prominence by supporting the musical course.

As an example, I refer to pages 39-42 of *Partiels* by Gérard Grisey [Example 1].¹⁷ The woodwinds are reaching a point of culmination: loud, high, and fast. For the perception of this passage the dynamics, the tessitura, and the density are of first importance. Gradually the dynamics decrease and

¹⁷ The examples appear at the end of this article.

the speed slows down, thus decreasing the density. Only the tessitura remains unchanged.

At the same time, a similar evolution is taking place in the strings. The series of natural harmonics is gradually louder and faster until Rehearsal 32 (page 41) and returning to silence at Rehearsal 33 (end of page 42). Once again, it is the dynamics and the density which increase and decrease, while the tessitura remains unchanged.

By reinforcing this general development, the harmony seems to play a secondary, supporting role in this passage. The harmony is indeed reinforcing this general development by increasing or decreasing the amount of notes according to the density, but the harmony remains on a secondary level since there is no autonomous harmonic development because this whole passage is built on only one chord.

HARMONY AS A FOREGROUND PARAMETER

Neglecting the harmonic power of spectralism, however, would be a big mistake. Pages 19-21 of the same composition [**Example 2**] show a passage where the harmony is undoubtedly the most important parameter. The dynamics play a secondary role, turning these progressions into smooth transitions. As a result, harmony is in this passage not only used to create new timbres but has its own clearly perceivable development. In other words, harmony is in this case creating a structure by progressions, and meanwhile the chords are developed in a timbral way.

This is a famous passage where Grisey calculated and orchestrated the effect of ring modulation of consecutive dyads.¹⁸ The effect of ring modulation and the mastery of orchestration create a sense of timbre, the changing dyads on the other hand create a harmonic rhythm.

HARMONY: A SYNTHESIS BETWEEN TIMBRE AND PROGRESSIONS?

Finally, I would like to raise the question of whether it is possible to use harmony both in a spectral way to create timbres, and in a traditional way to create structures by chord progressions. How can the richness of the spectral harmony—what I called “a special kind of harmonic experience” at the

¹⁸ For a complete and detailed analysis of *Partiels*, I refer to the paper of Chris Arrell, “The Music of Sound: An Analysis of *Partiels* by Gérard Grisey,” in this volume.

beginning—how can this richness be integrated in a regular harmonic working method? With the following example of my own work, I would like to throw more light onto this question. Far from claiming to have found any answers, I do hope—by means of this example—to provide ideas for reflection or discussion.



The example is taken from *Amber*, a composition for flute, violin, viola, and violoncello [CD 1:1]. The harmony at the beginning is derived from the overtone series on F. Different chords are suggested by shifts inside the overtone series. These shifts are based on a particular property of the series of harmonics.

Every element of the overtone series is present with its own overtone structure. All multiples of three for instance represent the overtone series on the third harmonic. The 15th harmonic is consequently also the fifth harmonic on the third, and besides the 15th harmonic can act as the third harmonic on the fifth [Example 3]. The harmony of *Amber* is based on such interpretations of the series of harmonics as can be seen in Example 3. The letters indicate on which note the chords are built, and the number below shows which number this note represents in the overtone series on F [Example 4].

Two remarks should be made: the first is about the use of quarter-tones. The use of quarter-tones itself is not surprising, especially not in a “spectral” context. The limitation to use only quarter-tones and no smaller microtonal intervals might call for some clarification. There is no need to argue that smaller intervals are approximating the overtone series more precisely, but the smaller the interval unit the more difficult it becomes to create chord progressions with common tones. An example: the seventh harmonic is too low in a quarter-tone context (using eighth-tones, the seventh harmonic is almost consonant) but in a quarter-tone context the interval from the seventh harmonic to the 15th is the same interval as from the fifth harmonic to the 11th. Such reinterpretations of intervals provide possibilities for creating chord progressions.

A second remark is about which partials are used. Early spectral compositions tend to explore many partials even beyond the 20th harmonic. In order to be able to perceive such subtle harmonic and/or timbral changes, the ear needs time. This explains the slow harmonic movement of spectral music. On the other hand limiting oneself to quarter-tones makes the use of the higher partials difficult because the interval of a quarter-tone is rather big compared to the small differences between these high partials.

In the end, then, it seems to be a matter of choice: either one explores the very high partials in a very slow harmonic rhythm, or one does not focus on

the high partials so as to allow the creation of a perceptible harmonic rhythm. This attempt at a theoretical model is maybe one of the possibilities of how timbre and chord progressions can be brought into a synthesis.

CONCLUSION

Through a fascination and admiration for spectral music, regular listening led me to ascertain the static character of a lot of the spectral harmony. Other parameters such as dynamics, rhythm, density, and so on, are brought to prominence during the musical discourse. In this paper, I have tried to give reflections on this theme, and more precisely, on whether a synthesis with traditional harmony can bring some new perspectives.

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EX 1 (2/4)

40

7^h

Fl.

Ob.

Cl.

Fag.

Tromp.

Tromb.

Perc.

Vln.

Vla.

Vcl.

Cb.

Les signes de chef d'orchestre par un autre, mais à l'endroit de quel moment le musicien doit changer de timbre.

Example 1 (cont.). Gérard Grisey, *Partiels*, page 40.

Handwritten musical score for *Partiels* by Gérard Grisey, page 42. The score is written on a grid of staves. The top staff is labeled "7" and "2 (1/2)". The bottom staff is labeled "7" and "2 (1/2)". The score includes various musical notations, including notes, rests, and dynamic markings such as "ppp" and "ppp mezzo". The score is written in a complex, multi-measure format, with multiple staves for each instrument part. The instruments listed at the bottom are: 1. Vc, 2. Vc, 1. Vc, 2. Vc, Vc, and cb.

Example 1 (cont.). Gérard Grisey, *Partiels*, page 42.

EXAMPLE 2 (1/3)

19

percevoir la C.E. basse

17

Example 2. Gérard Grisey, *Partiels*, page 19.

EX. 2 (2/15)

20

5 2 4
8 128 = J

18

Example 2 (cont.). Gérard Grisey, *Partiels*, page 20.

Handwritten musical score for 'Partiels' by Gérard Grisey, page 21. The score is written on 24 staves, organized into three systems of eight staves each. The instruments listed on the left are: Fl (Flute), Ob (Oboe), Cor (Cor Anglais), Cl (Clarinet), Ccr (Corno), Tbn (Trombone), Fag (Fagotto), Vn (Violon), Vcl (Violoncelle), and Cb (Contrebasse). The notation includes various musical symbols such as notes, rests, dynamics (f, mf, pp, ppp), and articulation marks. A rehearsal mark '19' is visible on the right side of the page.

Example 2 (cont.). Gérard Grisey, *Partiels*, page 21.



Example 4. Overtone Series on F.

TIMBRE AS AN EXPRESSIVE DIMENSION IN MUSIC

Mine Doğantan-Dack

Anthropologists tell us that music is much older than civilization, which is assumed to have started with the invention of writing, about seven thousand years ago. Together with spoken language and religion, music is a universal attribute of humankind, and its universality has often been related to its expressive and affective powers. Indeed, one of the earliest written references to music in the West, a Sumerian inscription in cuneiform from about 2400 BCE, is about the powerful effects musical sounds were valued for. Accordingly, music was used in ancient Mesopotamia ...

To fill the temple court with joy
To chase the city's gloom away;
The heart to still, the passions calm,
Of weeping eyes the tears to stay.¹⁹

The nature of musical expression constitutes one of the central issues in Western musical aesthetics, and historically two stances can be discerned in this regard: one is known as formalism, and the other is what I shall refer to as the evocative tradition. The basic thesis of formalism is that the meaning of music resides singly in its structural relationships and that any expressive significance it may involve is purely and peculiarly musical. According to the evocative view, on the other hand, the intelligibility as well as the expressive powers of music arise from its capacity to point to, i.e. to symbolize and evoke, non-musical experiences. The majority of writers in the history of Western musical thought have maintained that music is indeed evocative in this sense. Even the most notable advocates of the formalist tradition, including Eduard Hanslick and Igor Stravinsky, contended that there is in our musical experiences a dimension that inevitably evokes phenomena of a non-musical kind. Hence, Hanslick, who argued that the essence of music is only sound and motion, would nevertheless concede

¹⁹ Quoted in Headington 1977: 13.

music the capacity to represent the dynamics of inner movements that characterize our emotions. As for Stravinsky, while he stated, in his often-quoted words, that “music is, by its very nature, essentially powerless to **express** anything at all” (1936: 53), he would not hesitate to describe one of his own compositions dedicated to the memory of Rimsky-Korsakov in terms of its expressive, symbolic content, i.e. as a ceremony of “all the solo instruments of the orchestra [filing] past the tomb of the master in succession, each laying down its own melody as its wreath against a deep background of tremolo murmurings simulating the vibration of bass voices singing in chorus” (1936: 24). As music psychologist John A. Sloboda writes, “somehow the human mind endows sounds with significance. They become symbols for something other than pure sound, something which enables us to laugh or cry, like or dislike, be moved or be indifferent” (1985: 1).

Various writers within the evocative tradition have based their arguments on the assumption that at the root of musical expression are the formal resemblances—or the isomorphism—between musical structures and various other kinds of human experiences. Accordingly, listeners experience music as intelligible and expressive due to its structural similarities to non-musical phenomena such as speech, emotions, and bodily movements. The tradition of finding correspondences between music and these kinds of human experiences can be traced back to ancient Greeks who conceived of the structures of music, poetry, and dance as naturally isomorphic, and used the same word—*mousike*—to describe all three arts. Later periods of Western musical aesthetics and theory are each distinguished by the emphasis given to language, or emotions, or bodily movements in discussions about musical meaning and expression. For example, during the late sixteenth century—the early Baroque period—theorists were preoccupied with the relationships between musical structures and the dynamic patterns of the emotions, and their hypotheses were glorified as the Doctrine of the Affections. During the seventeenth century, the emphasis shifted to the structural similarities between music and oratory, both of which aimed to move the affections of the listener. With the 18th century came a synthesis of these prevailing views: accordingly, the dynamic patterns defining emotions were most clearly manifested in the voice, and therefore the meaning and expression of music arose from its capacity to imitate the voice delivering an impassioned speech or song. As we come to more recent times, we find an increasing interest among music theorists in explaining musical experiences by reference to bodily movements, or to so-called body-image schemas; their main assumption is that we experience musical phenomena as meaningful

and expressive due to a metaphorical mapping of our bodily experience of the physical world onto music.

Writers within the evocative tradition have scrutinized essentially two variables of music in their discussions of musical expression and symbolism: pitch and rhythm. For instance, the Baroque Doctrine of the Affections is centered on the structural resemblances between various affects such as anger, fear, love, tenderness, etc., and specific rhythmic patterns and intervals. Recent studies on the relation between music and body image schemas are again based on the relationships between melodic, harmonic, rhythmic movements in music and bodily motion.

In comparison to pitch and rhythm, timbre has received very little attention in studies of musical meaning and expression, partly because there has not been much consensus among music theorists and psychologists on the precise nature of this complex musical phenomenon. Until the advent of computer technology, which greatly contributed to our understanding of timbral phenomena, the prevailing conception has been that timbre is determined acoustically by the presence and strength of particular overtones. According to this conception, which originated around the mid-19th century particularly as a result of the discoveries made by Hermann von Helmholtz, timbre is brought about by the spectrum of the steady state of a tone. Recent investigations, however, have revealed that other factors—including the attack, the temporal evolution of the spectrum during the transient phases, and noise—are crucial in determining timbre.²⁰ Furthermore, it is common knowledge that the way an instrument is played can profoundly alter the resulting timbre. Hence, unlike pitch, timbre does not present a single scale along which tones can be ordered, and in this sense, it is regarded as a multidimensional phenomenon. In spite of all the recent advances, however, there is no substantial work on the expressive and symbolic functions of timbre in Western music.

Before discussing timbre in its musical capacity, a brief remark on the significance of the timbral dimension in our aural experiences is in order. Human beings are universally sensitive to the timbral attributes of sounds, and as in the case of pitch and rhythm, timbral semantics has biological, psychological and cultural bases. In the case of pitch and rhythm, our biological make-up predisposes us to respond with (often negative) affect to sounds with very low pitch, or to rhythms that unfold very slowly. Whether

²⁰ Carl Stumpf already discovered in 1910 that when the initial transient or the attack of tones played by various instruments was removed, listeners could no longer identify the instruments (Stumpf 1910).

humans are universally predisposed to respond to certain timbres in similar ways has not been investigated; however, many—if not all—humans experience the screech of a chalk, for instance, as disturbing and even painful. This is a very basic, almost elemental response that takes place without any need for cognitive processing to decipher the meaning of the sound.

The universal sensitivity of humans to timbre is closely related to the fact that one of our basic means of communication—i.e. our own voices—consists of rich palettes of tone colors. There is much evidence indicating that humans employ timbral information of the voice in detecting and identifying various emotions. Even very young infants are sensitive to subtle shifts in vocal timbre expressive of affect. For instance, according to research carried out by Alf Gabrielsson and Patrik N. Juslin (1996), sadness is associated with dull timbre, anger with spectral noise, happiness with bright timbre, etc. Since the inner feel of emotions is largely distinguished by their dynamic shape, speed, and intensity, the kinds of associations reported by Gabrielsson and Juslin may be rooted in the isomorphisms we detect between the movement and transformation patterns heard in the temporal unfolding of a sound's spectra, and the dynamics of emotions. In this connection, Denis Smalley writes that

motion and growth processes are not exclusively or even primarily sonic phenomena. Energy, which is inherent in spectral motion, belongs both to sounding and non-sounding experience. Motion, growth, and energy can be regarded as having a sonic reality but they can also be interpreted metaphorically and symbolically. (1994: 37)

Hence, spectromorphological features of sounds, i.e. their timbres, can evoke non-musical phenomena related to motion, including emotion.

The affective meaning of vocal timbres is closely related to the idea of timbre as the cause of a sound. It is well known that the manner of physically initiating and sustaining a sound, i.e. the gestural aspect in producing it, is one of the decisive factors for its timbral identity. The timbral variations that we hear in the voice expressing an emotion are related to the physical gesture that produces the sound; vocal gesture, in turn, is related to the state of the muscles of the vocal apparatus. Researchers argue that each emotion is characterized by a specific imprint in the muscular structure of the vocal organs, and it is these changes that lead to the characteristic timbral changes in the voice for each affective state of the speaker (Scherer 1995). It can be argued that these gestural imprints that we naturally identify in the voice serve as paradigms for attributing expression to instrumental tones. The similarity of the articulatory gesture behind an

instrumental tone to a vocal gesture—in terms of speed, intensity, and motion—evokes the affective content of the vocal tone. It is due to such evocation that gesturally sensitive instruments have traditionally been regarded as capable of producing “singing” or “declamatory” tones; indeed, one way of ordering instrumental timbres is through their closeness to the voice in this sense.

A similar line of recent research concerning the motor aspects of timbre perception takes the sound-producing bodily gestures—rather than vocal ones—as fundamental. Accordingly, humans categorize sounding events on the basis of the actions involved in producing them, such as hitting, striking, blowing, kicking, scraping, etc., and timbre perception and cognition are related to the features of sound-producing actions. The gestural experience of producing a sound in the physical world interacts with its perception. Hence, this motor theory holds that “a definite component of what we do as listeners involves ... a form of kinesthetic empathy, an identification with the embodiment of a sound” (Mead 1999: 10). There is not much work on whether such gestural information that reaches our ears through timbre indeed evokes specific affective states, or is expressive in non-iconic ways. My intuition is that it would require an additional step—one we normally do not find in the case of vocal gestures—to relate the action in question to an affective state. For instance, the sound of someone scraping a surface with vigor may evoke anger only if we associate the action that we imagine ourselves as hearing, with anger, rather than directly relating the timbral quality of the sound to anger. Thus, vocal gestures—rather than bodily ones—function as primary timbral referents in attributions of affective meanings to non-vocal sounds.

The source-cause dimension of timbre has been a central topic of discussion in recent literature on electro-acoustic music, as the interactive relationships between a sound and a source or causal agent may not be clearly established in this medium. According to one writer, “in the listening process of traditional Western music we have always been very aware of instrumental and vocal **sources**,” and “the possibility (or impossibility) of source recognition seems to be a crucial aspect of the comprehension of electro-acoustic music” (Ten Hoopen 1994: 61; emphasis added). In contrast to this commonly accepted view of “traditional” Western music among writers on electro-acoustic music, theorists of the tonal and non-tonal repertoire have complained that most analysts view the listening experience as almost a disembodied process of engaging with a totally abstract structure, such that the contributions of the physicality of the sources and of music-making to musical meaning are disregarded. Indeed, it is this

presumed neglect that has led to the recent interest in re-evaluating some of the basic concepts of music theory—such as musical space, tonal attractions, and musical motion—in terms of body-image schemas. These opposing perspectives on the way traditional Western music is heard derive in large part from a peculiarity of the phenomenon of timbre: since timbre is one of the primary perceptual means for sound-source recognition and identification, it is perhaps the most objective of aural phenomena directly pointing to physical reality—to the matter of sound. At the same time, timbre is phenomenally the least mimetically available attribute of sounds: unlike the pitch and rhythmic dimensions, we cannot faithfully reproduce in our voice the timbres of most natural events and of musical instruments. Thus, timbre can be seen as the least embodied, and in this sense, the most fleeting and abstract attribute of a sound. These peculiarities do not involve, however, a contradiction but point to a dimension of the aural world that only timbral phenomena can represent. Timbre is in fact not only about the **matter** of sound, but more precisely, about the meeting and interaction of matter with **force**: it is the experiential result of the constant attunement between the force initiating and sustaining a sound and the responding sound-body. In hearing timbre, we hear the boundary between the most concrete and the most abstract of all phenomena, i.e. the boundary between matter and force. Metaphorically, we can say that timbre is the **voice** of matter as it converses with force.

Now, contrary to what most theorists of electro-acoustic music claim, the essential difference between “traditional” and electro-acoustic music is not that in the former the material cause of sounds is always recognizable by listeners. I would like to argue that it is rather our experience of the permanence of the source/sources that distinguishes the music of the tonal/non-tonal and electro-acoustic repertoires. Indeed, in “traditional” Western music, it is this permanence that allows us to focus on non-timbral musical structures in the listening process; source-permanence causes us to take the existence of a material source for granted, so to speak, and pitch and durational features can be experienced as abstract structures. In this connection, Pierre Schaeffer’s words are revealing; he writes that “instrumental activity, the visible and first cause of every musical phenomenon, has the distinctive quality of tending first and foremost to cancel itself out as a material cause” (Schaeffer 1966: 43).

The dimensions of timbre I have discussed so far, namely the connections with the source and gestural cause of sounds are local, i.e. short-range phenomena. Indeed, many writers have regarded timbre as the sensuous element in music, lacking large-scale structural significance. According to

this view that regards pitch structures as primary, timbre serves to highlight the formal divisions, tension and relaxation patterns arising from pitch relationships. While instrumentation certainly plays a role in the expressive meaning of music—recall, for instance, Mozart’s representation of the terror of the Commendatore in the final act of *Don Giovanni* through horns and trombones playing *fortissimo*—timbre in this view functions as a local, expressive intensifier.

The expressive meaning of timbre in traditional Western music is not, however, limited to its local functions. The subjective constancy and permanence of the sound-source(s) that we experience provide the grounds for the large-scale significance as well as the symbolic power of timbre. A few words on the notion of “subjective constancy” would be appropriate here. Research on timbre has revealed that “the transients and steady-note frequency spectra change dramatically from note to note across an instrument’s playing range” (Handel 1991: 170). For instance, the number and amplitude of the spectral components for low and high notes of a piano are very different. Yet, we experience the timbre of a piano as the same through all its registers. The human voice when articulating different vowels, and in different registers also produces very different timbres. Our knowledge of the timbral identity of instruments is acquired culturally through long-term exposure to their timbral behavior. The process of identification based on the subjective constancy of vocal and instrumental timbres is hence “a complex cognitive task which involves much more than a preordained, specific amount of acoustical data. Rather, the listener must also utilize musical knowledge (i.e. the playing range of certain instruments, whether or not they are commonly played with vibrato, etc.) in order to make an informed judgment” (Hajda et al. 1997: 267).

It should be noted here that it is not only our knowledge of the timbral identity of instruments that depends on cultural familiarity; the associations of instruments with various frames of mind are also cultural and in this sense rather arbitrary. For instance, the associations of the organ with religiosity, of the harp with celestialty, or of the trumpet with regality are based on Western musical practice.

Once we conceive of the essence of timbral phenomena in music as permanence-through-change, then the large-scale timbral structure of music can be heard as evoking and expressing selfhood or personality through formal resemblances. Indeed, in the words of music phenomenologist Don Ihde, “there is an old and deeply held tradition that vision ‘objectifies,’ and, contrarily but not so widely noted, there is also a tradition which holds that sound ‘personifies’” (Ihde 1976: 21). Among various non-sounding

phenomena that represent permanence-through-change, the most fundamental is the one we refer to as the self or as personality.

Indeed, even a cursory glance at historical sources would show that the large-scale expressive meaning of timbre has often been related to the notions of selfhood and personality, and that the integrity of an instrument has been based on its timbre. Plato, for example, in Book 3 of his *Laws*, where he describes the musical activities in a corrupt society, and refers to them as “lawless innovations,” writes that the musicians involved in these practices “were men of genius, but they had no perception of what is just and lawful in music. [They] **imitated the sounds of the aulos on the lyre** [and] ignorantly affirmed that music has no truth, and whether good or bad, can only be judged of rightly by the pleasure of the hearer.”²¹ According to Plato, then, instruments have personalities and ethical characters and should behave according to their nature. Another example along similar lines comes from the writings of Charles Avison, an 18th-century writer on musical aesthetics. In *An Essay on Musical Expression* (1752), Avison argues that neither the composer nor the performer should engage in “trifling imitations, such as mimicking flageolets, horns, or bagpipes on the violin.”²² Such imitations distort the personality of the instrument. To bring out its full expressive potential, however, an instrument can—and should, according to Avison—imitate the voice, a view characteristic of 18th-century music aesthetics, according to which the human voice serves as the paradigm for the “voice” of the instrumental persona. In this connection, I am convinced that there are significant connections between the rise of psychoanalysis, the incorporation of the subconscious realm into theories of personality at the end of the 19th and the beginning of the 20th centuries, and the attempts by composers starting around this period to bring out unusual timbres from traditional instruments—including Schoenberg’s technique of *Sprechstimme*.²³ These cannot be seen merely as efforts to produce new timbres per se, but to make a well-known instrument speak in a new voice, in the voice of its subconscious, so to speak

Conceptualizing the timbral structure of music as evoking a virtual persona is consistent with the various expressive meanings that are assumed to arise from pitch and durational factors. If pitch and rhythm express, symbolize, or evoke emotions, speech, bodily movements, and narratives—

²¹ Quoted in Lippman 1992: 11; emphasis added.

²² Lippman 1992: 103.

²³ Such connections would also accord well with the aesthetic principles of the artistic movement known as Expressionism.

as many writers in the history of Western musical thought have argued—it is only logical that listeners experience these as the expressions of a unified virtual musical persona. Timbre thus gives “voice” to the emotions, speech, and movements of the musical self. In fact, it **is** the voice of such a self.²⁴

Edward Cone argues along similar lines and states, “any instrumental composition can be interpreted as the symbolic utterance of a virtual persona” (1974: 94). According to Cone, “what makes a unitary virtual agent of an instrument is its assumption of a specific role in a musical context ... its individualization as the maker of a significant musical gesture” (1974: 96). Throughout his discussion, Cone refers to instruments rather than to timbres. Since timbre individualizes and personalizes a musical gesture, however, speaking of timbres rather than instruments would be more accurate: a musical gesture can be individualized by more than one instrument, and due to timbral blending still be experienced as a unified utterance.

Just as what we understand as the personality of an individual is the totality of his/her behavioral response patterns as seen in various contexts, the timbre or timbral identity, the individuality of an instrument (or sound-source), emerges as it displays its expressive range in various musical contexts. A richer, more varied expressive range means that the listener can experience the source-permanence more strongly, as the timbral identity is retained through many varying contexts. For instance, hearing the timbral behavior of a piano in all its registers, in various dynamic levels, and played with different manners of articulation, creates for the listener a strong Gestalt for its individuality.²⁵ It should also be noted that it would be most

²⁴ The issue of subjectivity in music has interested a number of authors, and some have carried out empirical research on this topic. Watt and Ash (1998), for example, showed that listeners indeed identify person-like qualities in music readily, and accordingly experience music as creating a virtual person. These studies, however, do not address the connections between timbre and subjectivity.

²⁵ Schenker’s organic conception of musical form rests on a similar assumption. In his *Harmony* he writes: “The sonata represents the motifs in ever changing situations in which their characters are revealed, just as human beings are represented in a drama. For this is just what happens in a drama: men are led through situations in which their characters are tested in all their shades and grades, so that one characteristic feature is revealed in each particular situation. And what is character as a whole, if not a synthesis of these qualities which have been revealed by such a sequence of situations? The life of a motif is represented in an analogous way. The motif is led through various situations. At one time, its melodic character is tested; at another time, a harmonic peculiarity must prove its valor in

instructive to consider the timbres of natural phenomena (water, wind, fire, etc.), of machines, and of electronic sounds in terms of their capacities for retaining timbral identities through expressive timbral changes, and see whether traditional instruments have richer ranges in this sense.

As a conclusion to this discussion on the expressive dimensions of timbre, let us consider two musical examples: the “Russian Dance” from Stravinsky’s ballet suite *Petrushka* and the same Russian dance as transcribed for the piano by the composer himself. There is not much research on how transcriptions affect the expression and meaning of musical works. In one of the few studies on this topic, orchestrated pieces—from both tonal and non-tonal repertoires—were compared with their piano transcriptions (Paraskeva and McAdams 1997). The authors concluded that orchestration plays a modulating role on tension-relaxation profiles measured across the excerpts. According to their study, large-scale expressive aspects of musical experience are not based merely on pitch structures. To be sure, not all music is amenable to transcription. When timbre **is** the defining parameter of a musical gesture, as for instance in spectral music, the idea of transcribing the music cannot arise. Here, the musical gesture comes into being already individualized: there is no other way of expressing it musically, whereas a gesture from a tonal work, for instance, retains something of its identity when presented in a different timbre. This is not to say that all tonal—or non-tonal—pieces in the Western tradition can easily be transcribed. For instance, Liszt, who was a master of transcription, spoke of one specific piece for which he could not conceive a convincing piano transcription: the first movement of Mozart’s Symphony No. 40 in G Minor.

In the “Russian Dance” from *Petrushka* three puppets—Petrushka, the Ballerina, and the Moor—suddenly come to life and dance a wild *trepak*, a fast Russian dance in duple meter, for the fairgoers in St. Petersburg. In Stravinsky’s own words, the piano is supposed to represent Petrushka himself. Very often, piano transcriptions of orchestrated music are regarded as impoverished versions of the originals. With these two musical examples, I essentially make two points. Even though something of the original

unaccustomed surroundings; a third time, again, the motif is subjected to some rhythmic change; in other words, the motif lives through its fate, like a personage in a drama. Thus it is illicit to present the motif in a situation which cannot contribute anything new to the clarification of its character” (1954: 12).

identity of the orchestrated version is retained in the piano transcription, there are substantial philosophical reasons for calling them different pieces of music—and among these reasons is **timbre**. Secondly, the piano version is certainly at least as rich as the orchestral version in terms of timbre. Furthermore, one instrument does not necessarily imply a single musical persona. In other words, if the orchestrated version can generate several virtual musical personas for the listener through its rich timbral qualities, so too can the piano version.

Without doubt, the rapid advances in technology will reveal more of the mysteries of timbral phenomena in the near future.

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SPECTRAL MUSIC AND SCHAEFFERIAN METHODOLOGY

John Dack

INTRODUCTION

In this paper, I investigate how theoretical concepts formulated by Pierre Schaeffer (the “inventor” of *musique concrète*) might be applied to spectral music. Schaeffer made a clear distinction between musical languages using sounds of long duration and those based on differences between sound objects with discrete, short to medium durations. This distinction forms an important part of his typological system for sound classification. I examine the sound types of Typology and suggest the consequences for musical languages in general and spectral music in particular. In the conclusion, I apply some of these notions to an analysis of a short extract from György Ligeti’s orchestral work *Atmosphères*. While this composition might not be regarded as a spectral work, properly speaking, Ligeti is cited by musicologists as a spectral composer *avant la lettre*.²⁶ Consequently, even a short analysis of his music will demonstrate the relevance of Schaeffer’s “generalized” theories.

SPECTRAL MUSIC AND THE ELECTRO-ACOUSTIC MEDIUM

Many connections can be identified between spectral music and the electro-acoustic medium. Indeed, the potential for the subtle control and transformation of sound characteristics offered by the electro-acoustic studio provides many opportunities for the realization of spectral music. Consequently, it is unsurprising that several composers, such as Tristan Murail, Jonathan Harvey, and Kaija Saariaho, create spectral music both in

²⁶ For example, see Anderson 2000, Pressnitzer and McAdams 2000, and Harvey 2000.

the electro-acoustic studio and with conventional instrumental resources, thus indicating the plurality of musical languages that can be subsumed under the term “spectral.” Some of these compositions demand technological mediation, whereas others eschew the use of technology and rely instead on traditional real-time interaction between musicians and instruments. The relationship between the electro-acoustic medium and spectral music is, therefore, characterized not so much by technical expediency as the common sensibility demonstrated by composers regarding ways in which sounds can be selected, organized, and transformed to create musical meaning. An additional point to consider is that composers who do exploit the electro-acoustic medium have a choice of three principal genres for their compositional activities: acousmatic music, music for instruments with recorded sounds, and “live” electronics. Each of these exhibits different aesthetic challenges with consequences for the chosen spectral language. For example, in acousmatic music (the principal genre to which I shall refer in this article) the sound repertory can range from unmodified recordings used explicitly to evoke anecdotal “soundscapes,” to abstract, synthetic sounds bearing little or no reference to any physical event. I would suggest the sounds and the structural processes of the latter are more likely to be applicable to spectral music than the former. Given such diversity, can any claim of “common sensibility” be substantiated?

In the 2000 special issue of *Contemporary Music Review*, Joshua Fineberg discusses the sound vocabulary and techniques typical of a spectral music discourse (Fineberg 2000a). These include the exploration of the threshold between “timbre” (a problematic term in itself) and harmony, as well as various “acoustic” and “psychoacoustic” phenomena that are often consciously appropriated and exploited by spectral composers.²⁷ In this indispensable contribution to the literature on the subject, Fineberg is correctly suspicious of the reductive nature of the term “spectral” and, paraphrasing Tristan Murail, he refers to spectral music as “(...) an attitude toward music and composition, rather than a set of techniques” (Fineberg 2000a: 2). The word “attitude” might seem to lack specificity but it is, in fact, an intelligent choice of terminology and one with which many composers working in the studio will sympathize. I believe that Fineberg’s “attitude” and my claim of a “common sensibility” are, broadly speaking, synonymous. An electro-acoustic “attitude” can also be identified, which is

²⁷ See also Fineberg’s two appendices in this volume, “Guide to the Basic Concepts and Techniques of Spectral Music,” and “Musical Examples” (Fineberg 2000b and 2000c).

distinct from (though related to) the use of studio equipment and which encourages a particular approach to working with sound. Technology can reveal aspects of sound that would otherwise remain inaccessible to human intervention and application. This goes beyond a crude form of technological determinism that merely encourages composers to generate louder, longer, more complex sounds. Electro-acoustic composers, like their spectral counterparts, often demonstrate a scrupulous concern for fine differentiations in “color,” those momentary transitions from one state to another where subtle dynamic evolutions and delicate surface details emerge. There is invariably an increased awareness of the expressive potential in gestures and energy profiles exhibited by sounds as well as the sculpting of internal harmonic movements within sounds. Pitch and rhythm—the mainstays of traditional music—are not necessarily eliminated; rather, they are subsumed within an expanded vocabulary of sound resources where aspects previously considered as adjuncts to musical communication (such as vibrato and texture) are promoted to positions of greater importance in terms of their form-bearing potential. It is this experimental, exploratory “attitude” to sound itself that unites many spectral composers and their counterparts in the electro-acoustic studio. The simple action of decelerating a recorded sound and transforming the slowly evolving harmonic structure by filtering can change (permanently!) the way a musician works with sonic material. Schaeffer acknowledged the potential effects of the studio experience on composers when he wrote:

Musique concrète has certainly caused me pain; I found the sounds exciting but terrible. ... And if you imagine that this has diverted me from conventional sounds, you’ll have to think again. On the contrary, I have reheard traditional music, but with a different ear. I have heard better. ... ²⁸ (Schaeffer 1977: 169)

Contrast this sense of elation and joy in discovery with the use of sequencers, digital editing, and sampling in most popular recorded music where the “attitude” is directed more towards increased standardization and commodification.

²⁸ “La musique concrète, certes, m’a fait souffrir; j’en trouvais les sons passionnants, mais terrible. ... Et si vous imaginez que cela m’a détourné des sons conventionnels, je vous détromperai. J’ai, tout au contraire, réentendu la musique traditionnelle, mais avec une autre oreille. J’ai mieux entendu. ...” All translations from the French are mine in conjunction with my colleague Christine North, a former Senior Lecturer in French Language and Literature at Middlesex University.

Pierre Schaeffer's theories might not seem the most obvious choice for theoretical applications in spectral music. This is mainly due to the misunderstanding of the term "concrète" amongst English-speaking musicologists.²⁹ However, Schaeffer created an extremely intelligent system of sound categorization and description, which can be "generalized" and applied to music beyond the electro-acoustic studio. His *Programme de la Recherche Musicale* (or *PROGREMU*) is a five-part program that is intensely pragmatic but also speculative. It is described in detail in his *Traité des objets musicaux* and *Solfège de l'objet sonore*, and sets out not only to describe sound types and their features, but also to initiate discussions concerning how sounds might form musical structures. It is this concern with the structural potential for sounds in addition to their detailed description that elevates Schaeffer's theories above a mere taxonomy of sound types.

THE TABLEAU RÉCAPITULATIF DE LA TYPOLOGIE (TARTYP)

Schaeffer's *Programme de la Recherche Musicale* (*PROGREMU*) consists of five stages: Typology (to isolate and classify sound objects); Morphology (to facilitate a more precise description of these sound objects); Characterology (to group sound objects into "families" or "genres"); Analysis (to investigate the potential for features of sound objects to form direction-led structures); and Synthesis (to create new sound objects based on the investigations of analysis). Any summary of such a large and ambitious program will be woefully inadequate. Consequently, I will limit my investigation to the first stage—Typology—and its ramifications (which are embodied by its visual representation) for describing and analyzing certain types of musical language.

²⁹ "Concrète" in French implies a philosophical discourse which is not readily conveyed by the English term "concrete." The concrete/abstract dualism is central to Schaeffer's thinking, but unfortunately English-speaking musicologists have concentrated on the use of the term "concrète" solely in reference to "real-world" sounds. This does not take into account Schaeffer's important declaration: "(to) pursue musical research based on the concrete ... in order to reclaim the indispensable musical abstract" (... *poursuivre la recherche musicale à partir du concret ... tout entière vouée à la reconquête de l'indispensable abstrait musicale*) (Schaeffer 1966: 24). Thus, abstraction was the goal rather than source recognition.

	disproportionate duration (macro-objects) of no temporal unity		measured duration temporal unity			disproportionate duration (macro-objects) of no temporal unity	
	unpredictable feature	non-existent feature	formed sustainment	reduced duration micro-objects		non-existent feature	unpredictable feature
				impulse	formed iteration		
definite pitch fixed mass	(En)	Hn	N	N'	N"	Zn	(An)
	(Ex)	Hx	X	X'	X"	Zx	(Ax)
	(Ey)	Tx Tn	Y	Y'	Y"	Zy	(Ay)
not very variable mass	SAMPLES					ACCUMULATIONS	
unpredictable variation of mass	E	causal unity → T	W	Φ	K	P	A
	general example	general example				general example	general example
	held sounds			iterative sounds			

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Example 1. Tableau récapitulatif de la typologie.

Schaeffer's diagram, the *Tableau récapitulatif de la typologie* (or *TARTYP*; **Example 1**) is an attempt to represent every imaginable sound type. Contextual isolation of these sounds involved splicing recorded sound objects.³⁰ This stage of segmentation often resulted in the disruption of any explicit causal connection between the recorded sound and its source. Thus, investigations had to rely solely on perception (particularly if the sound was subsequently transformed beyond recognition). An initial, approximate stage of description is necessary for typological classification leading to the placing of sound objects within boxes formed by the intersections of the horizontal and vertical axes of the diagram. This kind of exercise is an important stage in sorting and classifying material that many composers of electro-acoustic music frequently undertake. In the process of removing sound objects from their context and subjecting them to even basic transformations, the composer will compile a large repository of sounds. Assigning a sound object exclusively to one type might require some negotiation with the system, and frequently re-adjustments are needed according to context. By "playing" with these sound objects and arranging them (provisionally, at least) in monophonic or polyphonic structures according to the intrinsic features of the sounds, sections of a composition (or even the whole composition) might emerge.

TARTYP is not organized on a simplistic (albeit logical) arrangement of pitch on the vertical axis and duration on the horizontal. The vertical axis subdivides **mass** (Schaeffer's generalized notion of pitch) into four principal categories which are indicated on the left-hand side of *TARTYP*. Thus, it is not based simply on a division of the pitch field from high to low. Schaeffer reasoned that a sound object's mass either will be clearly defined and stable in the pitch field (for example, the notes of the traditional instrumental repertoire such as the violin, clarinet, and piano) or will consist of a complex spectrum (such as struck cymbals, for example, or piano clusters). In addition to these principal categories, Schaeffer lists mass that can vary slightly in the pitch field and mass that varies **within** the sound object in an unpredictable manner. For Schaeffer, the mass of the sound, one might say its very substance, was a fundamental part of how it should be classified. Accordingly, the concept of variation and change within the mass of sound objects is an essential criterion of *TARTYP* and an entirely new way of considering sound.

³⁰ In Schaeffer's original experiments this was accomplished by recording on supple shellac discs and using the technique of the "closed groove" (*sillon fermé*); later, magnetic tape superseded these discs.

The horizontal axis incorporates the duration of sound objects. *TARTYP* does not place sounds on an axis indicating an incremental increase in duration from left to right. Instead, aspects relating to duration radiate outward from the centre column. At the mid-point of the diagram, Schaeffer places the **impulse**, which is, in theory, so short that few of its features can be perceived. We can see, however, that this central column nevertheless contains several types of impulse (including a Y-type impulse that, according to its row, moves in the pitch field despite its short duration!). Schaeffer was fully aware of these possible inconsistencies, but aware also that they arose as a result of his determination to construct a comprehensive system. In practice, they can be accommodated without undue difficulty. As the columns for sound objects radiate left and right from this central position, they become longer in duration (note they are described as **macro-objects**) but, once again, Schaeffer's thinking is more subtle than to imply that duration in itself is the main principle for consideration in a classification method. The manner in which the energy of the sound is maintained over time is also of crucial importance. Essentially, there are only three choices for this category: the energy is emitted instantaneously (as in the impulse); it is continuous, such as a legato bowed note on a violin (these are the "held sounds" to the left of the impulse); or it is iterative, such as a tremolo on the violin (these are the "iterative sounds" to the right of the impulse). It must be emphasized that the notions of impulse, continuous, and iterative require careful consideration. Composers will demand a more precise description once this initial typological assessment has been made. For example, a piano note and a sustained organ note both have continuous sustain. Providing their durations are not excessive (impossible in the case of an untransformed piano sound!), they will be placed in the box denoted by "N." In the case of the piano note, it is self-evident that the spectral richness and the dynamic level will decrease over its duration. By contrast, these features will probably remain relatively constant in the case of the organ note (apart from a few milliseconds of noise at the sound's onset). During Morphology (the next stage in *PROGREMU*), greater exactitude is achieved and more refined classification of the sound object is accomplished. The important point is that in both cases the energy is maintained over the object's duration (otherwise it would be an impulse) and is not expended in a series of short, discrete bursts (otherwise it would be iterative). Hence they are both "N"-type sounds. In the case of the organ, the sound is maintained by the continuous passage of air through a pipe. The piano is more complex in that the sound is initiated by the single action of a hammer striking strings, but the physical system of the instrument prolongs and maintains the energy

by resonance. The piano note could be considered an extended impulse. Similarly, a succession of impulses could be classed as an iteration. The ultimate compositional context for these sound objects and their structural level within the composition would probably determine their classification. In reality, the lines separating the boxes in *TARTYP* are “fuzzy,” indicating zones of transition as one type gradually changes into another. However, for classification purposes before this context is established, the system is perfectly adequate. It must also be emphasized that these sounds might be synthetic in origin. Any consideration of how the sound is maintained according to real-world models is purely metaphorical. The sound object behaves **as if** it were sustained by a resonating sound body (the “as if” is crucial).

The notion of *facture*³¹ is also incorporated into the horizontal axis in order to construct on each side the two outermost columns of “macro-objects.” *Facture* is an explicitly qualitative notion. If a sound object’s spectral components and dynamic evolution behave in a manner such that a listener can imagine (vaguely or explicitly) a physical source and cause, then the sound object has *facture*. Of course, the sound object in question might be synthetic or it might be a real-world sound subjected to several transformations. *Facture* is assessed by ear, not by knowledge of the sound’s origins. Thus to have *facture*, a sound object must only give the impression of the way in which it could have been created, and therefore is related to our memory and knowledge of events in the real world. Thus, one might assume that sounds in the column containing “Hn,” “Hx,” etc., are shorter than those in the furthest column (“En,” “Ex,” etc.) due to their proximity to the central three columns containing impulses and “formed” sounds. However, these outer columns are not differentiated by their duration; rather, it is their *facture* that is of paramount importance. The columns should be thought of as overlaying each other, occupying the same areas of duration in the chronometric sense (though as this would involve three dimensions it would hardly be a comprehensible diagram!). For example, according to its position in the horizontal row, an Hx sound object has a fixed, complex mass. As it is in the column of “non-existent *facture*” it would probably lack a clearly perceptible onset and, as the sound continues, its spectral

³¹ A translation into English of “*facture*” is problematic. In the *Solfège de l’objet sonore* it is translated as “execution.” However, after much consideration my colleague Christine North and I decided to resurrect an old English term “*facture*” in order to preserve the notion of “making” (virtual or actual). This is also closer to the Latin *factura* and the French *faire*.

development and dynamic behavior would not suggest any cause (virtual or actual), such as friction or resonance. It might be considered a dynamically homogenized and distended X-type balanced note. This extended duration and lack of development would tend to ensure that any information that might be communicated by an onset would fade as it recedes in the listener's memory, and attention is diverted instead to the moment-by-moment progression of the sound. By contrast, an "Ex" sound object has "unpredictable facture." The onset will give no indication of subsequent dynamic and spectral behaviors. Sudden changes in both characteristics will occur at unpredictable moments. It is important to remember that the aforementioned Hx sound object might be longer in duration than the Ex one. To repeat: the two columns are differentiated by types of facture, and not by duration—they are both "macro-objects."

The central three columns along with the uppermost three rows of sound types are Schaeffer's "balanced" sounds, which comprise the vast majority of the traditional Western instrumental vocabulary. These nine sound types are those most likely to form "families" of sounds on an "instrumental" model due to their easily memorable "shape" and behavior. However, it is the sound objects in the outer regions of *TARTYP*—the **redundant** and **excentric**³² sound types such as the aforementioned Hx and Ex sound types—which constitute the principal subject of this paper.

Excentric Sounds

Excentric sound types are "at the limit" of the domain of sounds that can be used for traditional music. They form the outer ring of *TARTYP*—the two outermost columns and the bottom row. The "unpredictable" nature of their factures prompts the following remark from Schaeffer:

If one of these sounds occurs in a work, there is a danger that it distracts the listener's attention, because it is too structured, too unpredictable, and generally too cumbersome ... in any structure where it figures, it becomes a central axis rather than simply one element among others.³³ (Schaeffer 1966: 452)

³² I have used the slightly idiosyncratic spelling "excentric" to emphasize Schaeffer's concept that such sounds exist on the edges (i.e. outside the centre) of the conventional sound universe. This spelling is also used in the English translation of *Solfège de l'objet sonore*.

³³ "S'il arrive en effet qu'un de ces sons figure dans une oeuvre, il risque d'arracher l'attention de l'auditeur à son profit, car trop, structuré, trop imprévisible, et en

Such sound objects are complex and unpredictable in both spectral and dynamic evolutions. Note the three types in the central section of *TARTYP*'s lowest row (these are the large note [W], fragment [Φ], and cell [K]). As they inhabit the row of "unpredictable variation of mass," any sense of causal unity is weakened due to their chaotic or missing factures. Their position immediately beneath the balanced sounds, however, indicates that their durations are not as extended as the types placed in columns to the left or right. The **large note** is a continuous, coherent, evolving sound of medium duration. Schaeffer claimed a large note can be found in Bach's Toccata in D minor (Schaeffer 1966: 456) and (in a more prosaic example) he also cited the sound of water in a hotel's plumbing system (Schaeffer 1966: 441)! The logic and consistency of each individual component is subsumed into a coherent whole. This "coherence" might seem to contradict the "unpredictable variation of mass" row in which the large note is placed. It is nonetheless impossible to predict the entry points or the position in the pitch field of each element. The duration of the **fragment** is much shorter (hence its position in the impulse column) and its mass is disordered and incoherent. Lastly, the **cell** is of medium duration and consists of a number of short, discrete component sounds. While it might not be described as truly iterative, in the sense that it displays a regular repetition of similar elements, its energetic momentum is fractured and discontinuous. It is important to note that, despite the unpredictable nature of their mass, these three types are perceived as units: they display clear onsets, sustains, and terminations. Moreover, their durations are not so extended that the listener's perception will shift primarily to changes within the sound.

The **excentric** sound types in the boxes to either side of the three central columns are less familiar in instrumental terms (outside the avant-garde repertory). The continuous **excentric** sounds in the columns to the left are the **web** (T) and the **sample** (E). The "general example" of the **web**, as its position in the appropriate column indicates, displays no **facture**. According to Schaeffer, like the aforementioned **large note**, it consists of interwoven, slowly developing, indistinct elements and, most importantly, it will be "shapeless." (Compare this amorphous characteristic with the readily perceived, unified structure of the **large note**.) Thus, there will be no clear sense of an imagined causal origin. By contrast, the notion of **facture** can be applied to the **sample** but it will be unpredictable and incoherent. Schaeffer suggested the clumsy bowing of a beginner on a stringed instrument as an

général trop encombrant ... dans la structure où il s'insère, il devient pôle central au lieu de rester simple élément parmi les autres."

illustration of such a spasmodic, rough sound (Schaeffer 1967: 75). The bow scraping the string will produce a fractured and inconsistent sound that varies wildly, though its fricative origins might always be evident throughout the excessive duration.³⁴ The discontinuous sound types in the columns to the right are the **ostinato** (P) and the **accumulation** (A). The **ostinato** is a repeated series of **cells** (the repetition ensures its position in the iterative column). The **accumulation** is a prolonged sound object consisting of many shorter components. These are disordered and, unlike the **ostinato**, do not exhibit a clear repetitive pattern. As they resemble each other, they are perceived globally as a compact and lengthy agglomeration. Schaeffer suggested crackling embers or burning charcoal as an example of an **accumulation**. Note that the sound types in the bottom row are designated “general examples.” More specific types of **samples** and **accumulations** were suggested by Schaeffer according to the behavior of their spectral components. These were placed in higher boxes in the same column. Consequently, finer distinctions of mass mean that the sound type can be classified in a higher row of “fixed **mass**.” One can therefore identify **samples** of definite pitch (En) or **samples** of complex pitch (Ex). It is significant that, according to Schaeffer, at the extreme edges of the diagram the sounds begin to resemble each other: “So the extreme columns of our table meet up at their limits”³⁵ (Schaeffer 1966: 454).

Redundant Sounds

Redundant sounds occupy the three higher positions of the “non-existent **facture**” columns occupied by the aforementioned **excentric** sounds **web** (T) and **ostinato** (P). Thus, in accordance with the rows they occupy, these types display predictable, regular, even banal dynamic and spectral evolutions. In addition, their higher positions in *TARTYP*’s columns indicate that their mass either varies very little or remains fixed in the pitch field. It is this fixed or slightly varying mass in conjunction with non-existent **facture**, which differentiates them from **excentric** sounds. Note that sound types T and P are **excentric** rather than **redundant** because, while they are in the same columns as redundant sounds, their mass varies unpredictably

³⁴ We must always bear in mind (and be cautious about) the strong connection with real events in such examples. Schaeffer’s example illustrates the dynamic and spectral qualities of the **sample** but, of course, as a “macro-object” it will generally be more extended than any sound which could be played by even the most determined and undiscerning clumsy beginner.

³⁵ “Les colonnes extrêmes de notre tableau se rejoignent ainsi à la limite.”

(hence they are placed in the bottom row). The main redundant sound types are homogeneous sounds (Hn, Hx) which display fixed masses. In addition, there are special cases of **webs** (Tx, Tn) and **ostinati** (Zn, Zx, Zy). These are related to the **excentric webs** and **pedals** but their mass varies only slightly. Once again, hybrid cases are common in compositions and precise distinctions might be difficult, if not impossible.

IMPLICATIONS FOR MUSICAL LANGUAGES

In attempting to describe these sound types I have (inevitably, perhaps) repeated the perennial problem of using verbal descriptions of sonic phenomena which should ideally be heard. There are recorded examples of many of these types in the *Solfège de l'objet sonore*. After this discussion, the reader might legitimately ask, “is there any point to this system other than classification of sounds?” The answer is that there are important implications for these sound types in all musical languages—spectral music is no exception. Schaeffer writes:

We rediscover in a prosaic form the fundamental axiom: each structure is built on a variation, but we are led to this discovery by two very different types of experience. The one discovers structure in a discontinuous configuration, a **series** of “musical” objects: the other notices it in the continuity of a **single** object.³⁶ (Schaeffer 1966: 562)

Two principal types of language, therefore, could be proposed. The vocabularies of each would consist of either discrete sounds of short to medium duration, or long, continuous sounds—though, of course, many composers will mix the two. The former sounds are the types that occupy the three columns of **balanced** sounds in addition to the row immediately beneath them: the **large note**, **fragment**, and **cell**. Discrete sound objects can create structures as the listener perceives relationships between specific aspects (often but not always pitch) abstracted from the totality of concrete features. Space does not allow a full discussion of the ramifications of these sounds but the relationship known as “permanence of characteristics/variation of values” (*permanence des caractères/variations des valeurs*) encapsulates an elaborated notion of “instrumental” thought.

The remaining sounds—the continuous sounds—such as the **redundant** and **excentric** types, must now be considered. The duration of such sounds

³⁶ “On retrouve prosaïquement l’axiome fondamentale: toute structure repose sur une variation, mais on est conduit à cette découverte par deux trajets bien différents de l’expérience. L’un découvre la structure dans une configuration discontinue, une **serie** d’objets ‘musicaux’; l’autre la constate dans la continuité d’**un seul** objet.”

and their spectral and dynamic behaviors would tend to lead the listener to perceive variations “in the continuity of a **single** object.” Continuous sounds as principal structural elements have no real precedents in traditional music, which is why their use in electro-acoustic and spectral music presents analysts (and listeners!) with such challenges. In further elaborations to his theory, Schaeffer identified two different perceptual areas or fields relating to pitch and duration. Each tends to focus on discontinuous or continuous relationships. Pitch has a “harmonic” and a “colored” field. The former is applicable when sounds of definite pitch form relationships according to his concepts of values and characteristics as described above. The latter, “colored,” field is invoked when the sound objects are complex in spectrum or vary in mass. It is in this “colored” field of pitch that **redundant** and **excentric** sounds would be most likely to function. Schaeffer also identified two areas of durations. A “rhythmic” field will tend to produce abstract relationships based on values and characteristics as it concerns the perception of durations and distance between discrete objects. By contrast, in the “dynamic” field the ear would trace the variation’s trajectory in dynamic profile or harmonic development over time. Schaeffer classified types of variation according to the speed and the density of information; these were then related to the variation’s **facture**. Thus, a variation can be assigned to one of three types of **facture**. If the variation consists of minor fluctuations within an overall “logical” process, it is of the **fluctuation** type. If the variation is continuous and progressive, it is an **evolution** type, and if it is in discontinuous stages, it will be a **modulation** type. These are associated with speeds ranging from slow through medium to quick, to produce an approximate, but helpful, typology.

Another quotation illustrates these issues succinctly:

Let us imagine on the one hand a music using continuous or complex sounds. It offers glissandi or masses, which are neither situated nor calibrated in the harmonic perceptive field. On the other hand, it enables the hearing of melodic or dynamic trajectories which did not exist before. This music has therefore chosen at both one and the same time other objects and other qualities of perception which we call “plastic.” One could even imply that it gains its meaning where the preceding music lost its [meaning].³⁷ (Schaeffer 1966: 636)

³⁷ “Imaginons au contraire une musique usant des sons continus ou complexes. Elle offre des glissandi ou des masses qui ne sont ni situés, ni calibrés dans le champ perceptif harmonique. En revanche, elle fait entendre des trajets mélodiques ou dynamiques qui n’existaient pas précédemment. Cette musique a donc choisi à la

It is significant that this quotation occurs in the concluding sections of Schaeffer's *Traité des objets musicaux*. At the beginning of the book, Schaeffer speculates on the experiences of a primitive man as he begins to experiment with the structures that can be created from the sound sources of gourds. These would be, of course, discrete "balanced" sounds. The resulting structures would be the consequence of relationships perceived at all structural levels via parameters such as pitch and rhythm. These are human-made sounds producing recognizably "traditional" musical languages. By contrast, at the conclusion of the *Traité des objets musicaux* Schaeffer considers the reactions of a primitive man to sounds that can be described as continuous. He cites the sound of the wind and the sea. These are long complex sounds less easily made by human agency, and thus more "challenging" (I would remind the reader of the notion of **facture** in this regard). If this theoretical early man attends to the sounds in an aesthetic manner then Schaeffer believes he is listening "musically"—with a certain disinterest. However, they cannot be compared to discrete sounds in the same way, due to their excessive length, hence, the need for different perceptual strategies and aesthetic attitudes. These types of sounds, which occupy such a large number of boxes in Schaeffer's typology, form an important part of the spectral composer's vocabulary and are precisely where connections can be made.

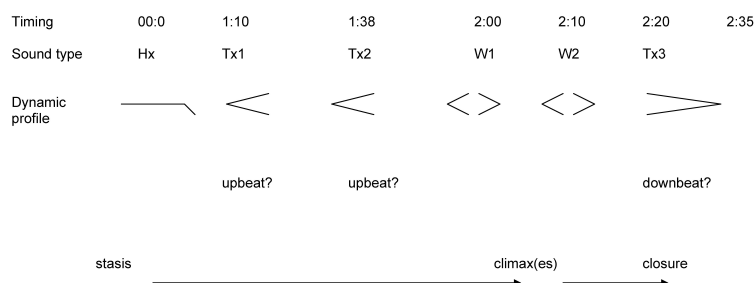
ATMOSPHERES

György Ligeti openly acknowledged the influence of electro-acoustic music on his musical thinking.³⁸ This is an honest and generous tribute as, since his early experiences at the WDR studio, he withdrew from any active participation in the medium. By Ligeti's own admission, therefore, many aspects of his language can be identified within the technical and aesthetic discourses of electro-acoustic music. To conclude, I would like to propose a brief analysis of the opening section of his *Atmosphères* according to Schaefferian typological classification. While this work might not be classed as "spectral" properly speaking, it does demonstrate a scrupulous concern for movement within sound masses and their surface details. These preoccupations, therefore, are immediately recognizable to spectral composers.

fois d'autres objets et d'autres qualités de la perception, que nous nommons 'plastiques.' On pourrait même insinuer qu'elle cherche son sens là où la musique précédente le fuyait."

³⁸ For example, see Ligeti 1970 and 1983.

I have segmented the opening section into six distinct subsections
[Example 2].



Example 2. György Ligeti, *Atmosphères* to Rehearsal C.

In this segmentation, each subsection consists of a particular sound type listed underneath the durations. The first section (which lasts 1 minute 10 seconds in the recording used for this analysis³⁹) is a cluster that I describe as an “Hx” sound type. My reasoning is as follows: the individual components are barely perceptible due to the close proximity of each instrumental voice and the use of mutes.⁴⁰ The cluster inhabits a wide pitch range of nearly five octaves, and because it is built of pitches in semitone steps, the overall effect is that of a “noisy” cluster—hence the “x” suffix. Its beautifully translucent quality is the result of Ligeti’s orchestration: only a few of the pitches are doubled by woodwinds and strings. As the cluster does not develop appreciably, I suggest it is best described as a homogeneous or “H” sound type. There is certainly some slight change of spectral density as the wind clusters gradually reduce but (to my ears at least) they do not contradict the fundamentally homogeneous nature of the cluster. Only at the end of the subsection (at Rehearsal A) is there any appreciable diminution of dynamic level. The following two subsections can be described as Tx sound objects

³⁹ *Wien Modern*, Claudio Abbado conducting the Wiener Philharmoniker (1990) Deutsche Grammophon CD 429 260-2.

⁴⁰ These assessments were achieved solely by ear (in true Schaefferian fashion!). The score was examined only after this process of “transcription” and analysis in order to clarify events.

or **webs** (these are Tx1 and Tx2 on the diagram). Both display internal dynamic evolutions (which thus excludes them from the “H” sound types). As both are clusters they are still “noisy” and have the “x” suffix attached to the “T.” Each has a dynamic profile, which is the result of individual evolutions of individual pitches, though there is no **facture**. Moreover, both profiles are end-directed. For example, in the Tx1 sound object the crescendo in each individual line fans outwards from a central position in the cluster. Thus, there is a progression from the relative stability and lack of change at the beginning of the work (the Hx sound) to two initiatory events (created by Tx1 and Tx2). I classify the following sound objects—W1 and W2—as **large notes**, as both are relatively short and have self-contained and easily perceptible dynamic shapes. Once again, both are clusters and, like the first section, their “noise-based” quality results from the close-packed pitches. Nevertheless, as all the structures discussed so far, they are sufficiently “transparent” to permit further more subtle differentiation between them. The first **large note** is formed from the “natural” or “white” notes, the second from “black” notes. Consequently, it could be argued that the second has a distinctly “harmonic” characteristic due to its pentatonic-based construction. The contrast is certainly perceptible and can be experienced as a form of local “harmonic” movement. These **large notes** are followed by another **web**—Tx3—which has a distinct diminuendo.

This classification is necessarily inexact, and further refinements of each sound type should be given in a more detailed and sophisticated analysis. However, it can provide analysts (and composers) with terminology for the discussion of structures that are common to much spectral music. If my classification is correct (and let me repeat that this is subject to some negotiation!) we can see the beginnings of a stable-climax-closure pattern at a higher structural level (indicated on the lowest line of **Example 2**). The sound objects Tx1 and Tx2 function as “upbeats,” initiating the local climaxes of the **large notes** (W1 and W2) with their distinct dynamic shapes and harmonic content. In both pairs, the second object acts as a commentary or development of the first, which is interrupted before any real development can take place. The repeat of a Tx sound object (Tx3) with a reverse dynamic profile at the conclusion of the section under consideration could indicate a structurally significant closure that might be repeated or developed as the composition proceeds. Thus, this basic syntax might be developed or subverted as the composition progresses, which might elevate this brief description to the level of an analysis, properly speaking. As in much contemporary music, the task of segmentation is fraught with difficulties. It is entirely possible to suggest alternative divisions of subsections. For

example, from the onset of Tx2, the following sounds could be considered as parts of one single evolving sound (though to my ears the salience of their harmonic and dynamic developments provides a “ready-made” perceptual segmentation).

It will come as no surprise to many musicians and analysts of this music that a theoretical system (and a French one at that!) has been developed that can facilitate an understanding of some of the processes so skillfully created and developed by spectral composers. I feel I have taken a first, tentative step in combining my researches in Schaefferian methodology with issues relating to spectral music. Much remains to be done and I look forward to discussing these topics with spectral composers (and no doubt modifying my views) in the future.

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DISCUSSION

Paul Whitehead: I'm in something of a dilemma now; we basically have used our hour trying to explain ... I'm sure there are some reactions to that. Maybe just one or two questions?

Cornelia Fales: A lot of what you're saying reminds me of [Wayne] Slawson's attempt to chart out timbres according to vowel features, and his idea that you could chart them out according to first and second formants, and whether they were acute, and so on, I don't know whether you know his work at all. But one of the things, one of the problems that he had, and he went through this elaborate—you know, it's a gigantic book telling you exactly how timbres should be arranged and when, and how they then are circular just as pitches, and so on—is that he never was very clear as to whether he was being descriptive or prescriptive. Was he saying "This is how music seems to work with timbre," or "This is how it **should** work with timbre"? And I wonder whether you think Schaeffer was talking about how he saw things as they already existed (or as they might exist naturally), or whether he was actually saying, "Here's what I think ought to happen in composition."

John Dack: I think with Schaeffer, it's a good point, the prescription-description balance was always a problematic one, that he knew. Schaeffer tried to understand how musical language worked in all its different manifestations, which is a hugely ambitious project, let's face it. He started off by simply analyzing by ear, he kept on stressing this, although he had himself a good musical education (again, this is another myth around Schaeffer that he didn't read music, that kind of rubbish is repeated by musicologists who simply haven't read about Schaeffer, if they say that). He'd had a good musical education. And therefore he was trying to simply describe how sound worked in the new situation of the electro-acoustic

studio—of course, using what was then a novel technology and shellac discs, and he didn't even have tapes. By [the time of] his writing of the *Traité des objets musicaux* in 1966, of course, he had tape, at least he had that. Schaeffer, of course, wanted to be a composer, and I think I have to put my hand on my heart and say I regard his works as being of more interest for theoreticians than composers (although some of his compositions come across as quite charming, in a way). He himself came from a very rich philosophical and literary background. He wanted to be an *écrivain* [author] according to his own writing, and he was steeped in French symbolist philosophy. So he comes from that whole background and anybody who reads Schaeffer has to be aware of the philosophical implications of a lot of what he says. But essentially he was trying to work out how musical language could function. It wasn't prescriptive. He was simply saying, "Look, this is how sounds seem to be working, this is how we seem to be able to use them." At the end of the *Traité des objets musicaux*—it's 700 odd pages long, you should have seen, it's that big—he actually said, "Well look, I am going to have to write another volume now, to actually go into composition, but I don't have the time." And he said, somewhat sadly, that he didn't really have the skill. I think he realized he wasn't really that much of a composer.

And so I think that, for Schaeffer, he isn't prescriptive. He is simply saying, "Try to understand your materials, even understand simply by these, by the ear. Listen." He had a problem with people who were writing these elaborate scores. He wasn't against that sort of music as such, but he said, "You can't **hear** this music. If you remember the two *Elektronische Studien* by Stockhausen, these elaborate matrices of frequencies. Schaeffer would look at them and say, "For Christ's sake, what do they sound like? Never mind looking at all these numbers, what does it sound like?" Now in a sense, that was the wrong question. And I think Stockhausen, for whom I have great admiration, was perfectly right continuing in his own work. But Schaeffer was saying, "Let's use our ears. Let's have a language based on the sounds, and what the **sounds** are doing." And so in that sense he was descriptive, but, I believe, in a very intelligent and systematic way. He joined all these sections of typology, morphology, characterology, analysis, and synthesis. Because you go back and forth over these disciplines as you work in the studio. I can say from my personal experience, that's what people do. They sit at a computer now, rather than a tape recorder, which is my own background. And you create sounds, you listen to them, you start to relate one sound to another, and that's exactly what Schaeffer was talking about. It's a very practical way of working, and I think that's the value of a

lot of Schaefferian methodology. So he wasn't saying, "This is how you **must** do it," he was simply saying, "This is how I believe sounds function. And let's explore that first, and let's try to derive a language from the sounds, rather than the other way round."

Yes, he was only saying what many other people said. He wasn't unique in saying this. But the trouble is people have very little access to Schaeffer, unless they read French, there are no translations. And so people don't have any access to Schaeffer. They read, unfortunately, second-hand, third-hand, fourth-hand accounts of Schaeffer. And people actually have got it wrong. It sort of sounds arrogant, but I don't mean that. But if people actually went back to what Schaeffer **wrote**, rather than what people **said** Schaeffer wrote, then a different picture emerges. And I think we are beginning to get that reappraisal now, because there are many young scholars around. I was at IRCAM only a couple of weeks ago, and there was a guy talking there about Schaeffer, who clearly knew his stuff. He had clearly gone back and read Schaeffer, and listened to Schaeffer, which is unfortunately still not that common. But it's getting better.

PW: Okay, I think we will have to end there. Thank you very much.